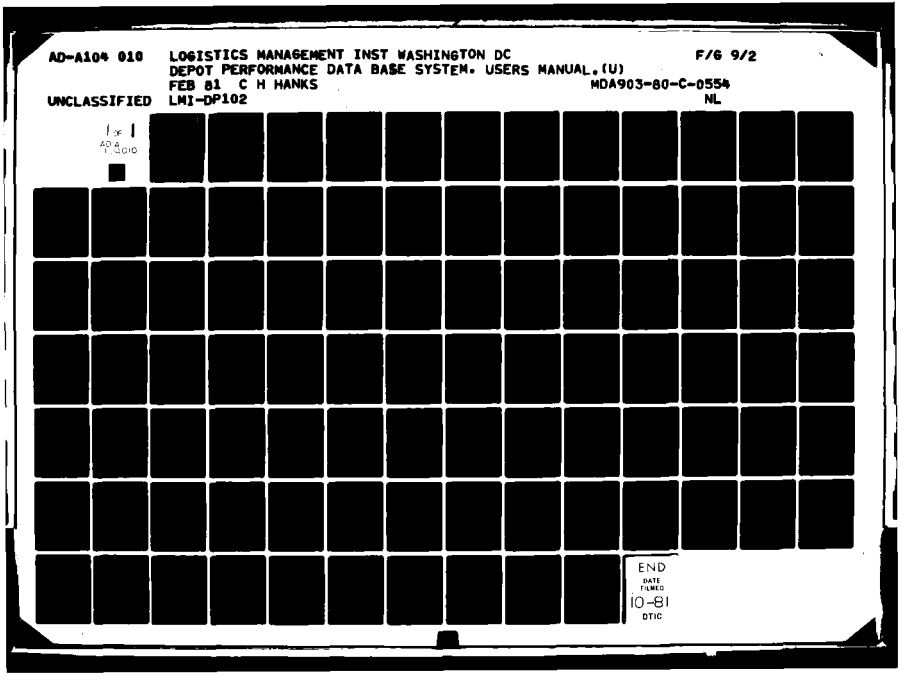
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DEPOT PERFORMANCE DATA BASE SYSTEM

USERS MANUAL

February 1981

C. H. Hanks

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FOREWORD

The Depot Performance Data Base System (DBS) is a computer-based management information system designed to support analyses of depot maintenance performance within the Department of Defense. It operates on depot maintenance cost and production data compiled annually by the Military Departments.

The system was developed by the Logistics Management Institute under the guidance of the Directorate for Maintenance Policy, Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics), OASD(MRA&L). It is operational on an IBM 3032 computer (System K) at the Air Force Data Services Center in Washington, D.C., utilizing the INQUIRE data base management system (DBMS) software package.

This Users Manual describes the capabilities of the Depot Performance DBS and provides instructions for its operation and use. The Manual's content and format follow the guidelines prescribed in DoD 7935.1-S, "Automated Data Systems Documentation Standards," September 1977.

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F. FEDERAL INFORMATION PROCESSING STANDARD SOFTWARE SUMMARY

SECTION 1. GENERAL

1.1 Objectives of the Manual

1.1.1 Purpose

The purpose of this Manual is to provide the information necessary to operate and use the Depot Performance Data Base System (DBS). The Manual is intended to be used by any programmer or analyst tasked to provide OASD(MRA&L) with data processing and information retrieval support using the DBS. End users, such as OASD(MRA&L) personnel, can also benefit from reading the Manual. It should assist them in using the DBS's full capability to support their information requirements.

1.1.2 System Addressed

The Depot Performance DBS uses the INQUIRE (Release 10, Version 1) DBMS package currently installed on System K (an IBM 3032 computer) at the Air Force Data Services Center (AFDSC), the Pentagon, Washington, D.C. The system is currently operational (as of February 1981) and has been used to produce management information reports for the Directorate for Maintenance Policy, OASD(MRA&L).

1.2 Background and References

1.2.1 Function of the System

The Depot Performance DBS is a management information system designed to extract information from historical cost and production data on depot maintenance programs in the Department of Defense. The cost and production data are submitted annually to OSD by the Military Departments, in response to the reporting requirements of DoD 7220.29-H, "Depot Maintenance and Maintenance Support Cost Accounting and Production Reporting Handbook." (The reporting requirements of DoD 7220.29-H are reproduced in Appendix D.) The 7220.29 data, normally submitted on magnetic tapes each December, cover the depot maintenance work completed in the preceding fiscal year.

The Depot Performance DBS is also used to maintain the 7220.29-H data base. One such maintenance task is the annual "loading" of submitted data. That task involves merging the new 7220.29-H data into the existing INQUIRE data base and creating back-up tape copies of the data. Other data base maintenance tasks of the DBS include storing, processing, and managing the DBS files to satisfy AFDSC system and administrative requirements. Each of these maintenance functions is covered in the Manual.

1.2.2 System History

The Logistics Management Institute initially developed the Depot Performance DBS to meet information requirements of the Directorate for Maintenance Policy, OASD(MRA&L). The initial system was documented in LMI report "Depot Maintenance Performance," November 1979. That system was installed on

System I (an IBM 360/75 computer) at AFDSC, with a data base consisting of FY 78 Army 7220.29 records. In subsequent tasking, LMI transferred the system to System K and expanded the data base to include the complete set of 7220.29 records (Army, Air Force, Navy, and Marine Corps), for both FY 78 and 79. The system was also refined to satisfy OASD(MRA&L)'s information requirements. The expanded system's capabilities, and its role in supporting OASD(MRA&L)MD's evaluation of depot maintenance programs are discussed in a recent LMI report "Depot Performance Analysis," March 1981.

This Manual has been prepared by LMI under a contract with OASD(MRA&L) (Contract No. MDA 903-80-C-0554) to document the system and provide instructions for its operation and use.

1.2.3 References

The following references are recommended as useful supplements to the Manual.

a. DoD 7220.29-H: "Depot Maintenance and Maintenance Support Cost Accounting and Production Reporting Handbook," October 1975.

   The 7220.29 Handbook defines the structure and content of the depot cost and production data. Consequently, it is required reading for all programmers, analysts, and users of the Depot Performance DBS.

b. LMI Reports: Task ML914, "Depot Maintenance Performance," November 1979, DoD Contract No. MDA 903-77-C-0370; Task ML005, "Depot Performance Analysis," March 1981, DoD Contract No. MDA 903-77-C-0370.

   Contact: Logistics Management Institute
   4701 Sangamore Road, Washington, D.C. 20016
   Telephone: (301) 229-1000 or Autovon: 287-2779/2127

   The LMI reports provide useful information on the depot maintenance responsibilities and information needs of OASD(MRA&L). The first report (Task ML914) also documents the operation and use of the initial Depot Performance DBS. That documentation is updated and expanded in this Manual.

c. INQUIRE Manuals: INQUIRE User Language Tutorial and INQUIRE Installation and Operations Guide.

   Contact: Infodata Systems Inc., Washington Regional Office
   5205 Leesburg Pike, Falls Church, VA 22041
   Telephone: (703) 578-3430 "Hot Line" (703) 578-0008
   (Manuals may also be obtained through AFDSC.)

   The INQUIRE DBMS is a proprietary software product of Infodata Systems, Inc. The INQUIRE Manuals provide detailed information and instructions on the operation and use of the INQUIRE DBMS. The "hot line" is useful for quick answers to technical questions. Infodata also sponsors periodic classes and seminars to aid INQUIRE users.

d. AFDSC Publications: AFDSC Users Handbook (Draft), Vol. VI - IBM Computer Systems; AFDSC INQUIRE DBMS Users Handbook (Draft).

Contact: Air Force Data Services Center
Directorate of OSD Systems (GN)
The Pentagon, Washington, D.C. 20330
Telephone: (202) 695-3389 or Autovon: 22-3389

These publications describe the AFDSC IBM operating system and the AFDSC INQUIRE DBMS installation, including available utility programs.

e. IBM Manuals: IBM System/3032 Operating System: MVS Messages (GC38-1008); MVS Codes (GC38-1002); OS/VS2 MVS JCL (GC28-0692); OS/VS2 TSO Terminal Users Guide (GC28-0645); OS/VS2 TSO Command Language Reference (GC28-0646); IBM MVS Utilities Manual (GC26-3902).

Contact: (all available through AFDSC)

The IBM manuals provide generic IBM operating system instructions. The Messages and Codes Manuals are particularly helpful for reading job log messages (the IBM system keeps and outputs logs containing information on every job which is submitted to the system), and for understanding failures/abort-ends (ABENDs).

1.3 Terms and Definitions

Listed below are terms, abbreviations, acronyms, etc. used throughout the Manual.

ADP - automated data processing

AFDSC - Air Force Data Services Center, which manages the computer hardware and the DBMS used in the Depot Performance DBS.

batch job - a self-contained job submitted to a computer which is processed by the system without further user interaction. Batch jobs often utilize card decks, but do not necessarily require cards. Jobs in the Depot Performance DBS are processed as batch jobs with inputs generated at a terminal.

data base - data organized into a set of similarly structured logical records, each of which describes a single entity in a class of uniform entities. The logical records in the Depot Performance data base are job order records for work performed at depot maintenance facilities.

In a data base, each logical record contains information units, or fields, which provide various kinds of descriptive information on the entity described by the record. There are 50 fields per record in the Depot Performance Data Base, including the name and stock number of the item repaired, the labor and material costs, the quantity overhauled, and the name of the facility where the work was performed.

In addition to having data structured into logical records, a data base contains an index to ease the relating, grouping, and retrieving of records.

A data base may be physically stored on a variety of media; the Depot Performance Data Base is stored on magnetic disk, with a back-up copy stored on magnetic tape.

DBMS - data base management system

Data base management systems are software packages that ease the retrieving, manipulating, reporting, and maintaining of data. They are characterized by user-oriented languages possessing English-like vocabulary and syntax and specially designed software modules (evoked through commands in the language) which provide powerful and flexible data handling capabilities.

DBS - data base system

JCL - Job Control Language, which comprises those statements in a job stream that precede the actual program statements or commands in the job. JCL statements provide the computer's operating system with the instructions and parameters it requires to initiate and execute user programs. IBM JCL for the OS/VS2 MVS operating system is used in the Depot Performance DBS.

job stream - the series of statements in a batch job. In an application of the Depot Performance DBS, a job stream will contain JCL statements followed by a series of INQUIRE command statements.

LMI - Logistics Management Institute

OASD(C) - Office of the Assistant Secretary of Defense (Comptroller)

OASD(MRA&L) - Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics)

OASD(MRA&L)MD - OASD(MRA&L), Directorate for Maintenance Policy

OSD - Office of the Secretary of Defense

PDS - partitioned data set, which is a computer-stored file that is segmented into directly accessible subfiles (or members) identified by member names.

query - a set of command statements written in the INQUIRE DBMS language. The term is used because the commands and subcommands in INQUIRE allow the user to request information from a data base and receive the desired information as output.

TSO - IBM Time Sharing Option

1.4 Security and Privacy

The Depot Performance DBS does not contain any classified material. The system operates in the unclassified mode available on System K from remote terminals using TSO. There are no privacy restrictions applicable to the Depot Performance data base.

Access to System K TSO operations requires a user ID and password from AFDSC. The procedures for obtaining them are described in Section 3.1.

SECTION 2. SYSTEM SUMMARY

This Section describes the Depot Performance DBS in terms of:

a. System Application

b. System Operation

c. System Configuration

d. System Organization

e. System Capabilities

It also describes the Depot Performance Data Base and discusses the input requirements of the DBS, together with the processing steps and typical outputs.

2.1 System Application

The Directorate for Maintenance Policy, OASD(MRA&L), is responsible for reviewing and evaluating depot maintenance programs for the Secretary of Defense. To carry out that responsibility, the Directorate requires extensive visibility into completed programs and the capacity to use the visibility in analyzing planned programs. The Depot Performance DBS was developed to provide the Directorate with the required historical visibility.

Beginning with FY 77, the Military Services provided the Maintenance Directorate with cost and production information on all depot maintenance work. For every completed job order, the Services identified the direct labor hours, the direct and indirect labor costs, and the cost of material, by weapon system, performing facility, work performed, appropriation category, and so forth. The Services submitted that data on magnetic tape, in the format specified by DoD 7220.29-H.

Recognizing the many potential uses for the historical cost and production data, the Maintenance Directorate selected data base management as an appropriate technique for accessing and summarizing the data. The Depot Performance DBS, using the INQUIRE DBMS, resulted from that selection.

Flexibility is an important characteristic of the Depot Performance DBS. While the Maintenance Directorate requires a variety of standard reports (several have been "built-in" for easy production), special reports will also be needed. To obtain these reports, system users must formulate and execute ad hoc queries. Such queries require that the user be familiar with both the information that can be retrieved from the 7220.29 data and the INQUIRE techniques for accomplishing the retrieval. As an aid in preparing ad hoc queries, this Manual includes a separate section on query development (Section 4).

2.2 System Operation

Figure 2-1 identifies the general steps involved in operating and using the Depot Performance DBS. This subsection describes each step in the figure, beginning with the tape submissions by the Military Services.

Each of the Military Services (Marine Corps data are included on the Navy tape) submits its 7220.29 data to OASD(C), which then passes the tapes to the Maintenance Directorate. The AFDSC (Logistics Sytems Division) then edits the tapes as specified by DoD 7220.29-H (Appendix D). The Maintenance Directorate returns any tapes which fail the edit to the Services for correction. The edited tapes are then translated from Honeywell Standard Format into IBM Format by the Logistics Systems Division, AFDSC.

Upon completing the translation, AFDSC informs the Maintenance Directorate of the reel numbers of the new tapes and the total number of records each Service submitted. The user of the Depot Performance DBS can now load the (translated) Service tapes into the data base and begin processing. (Note: this presupposes that the user has obtained a user ID and password for System K.)

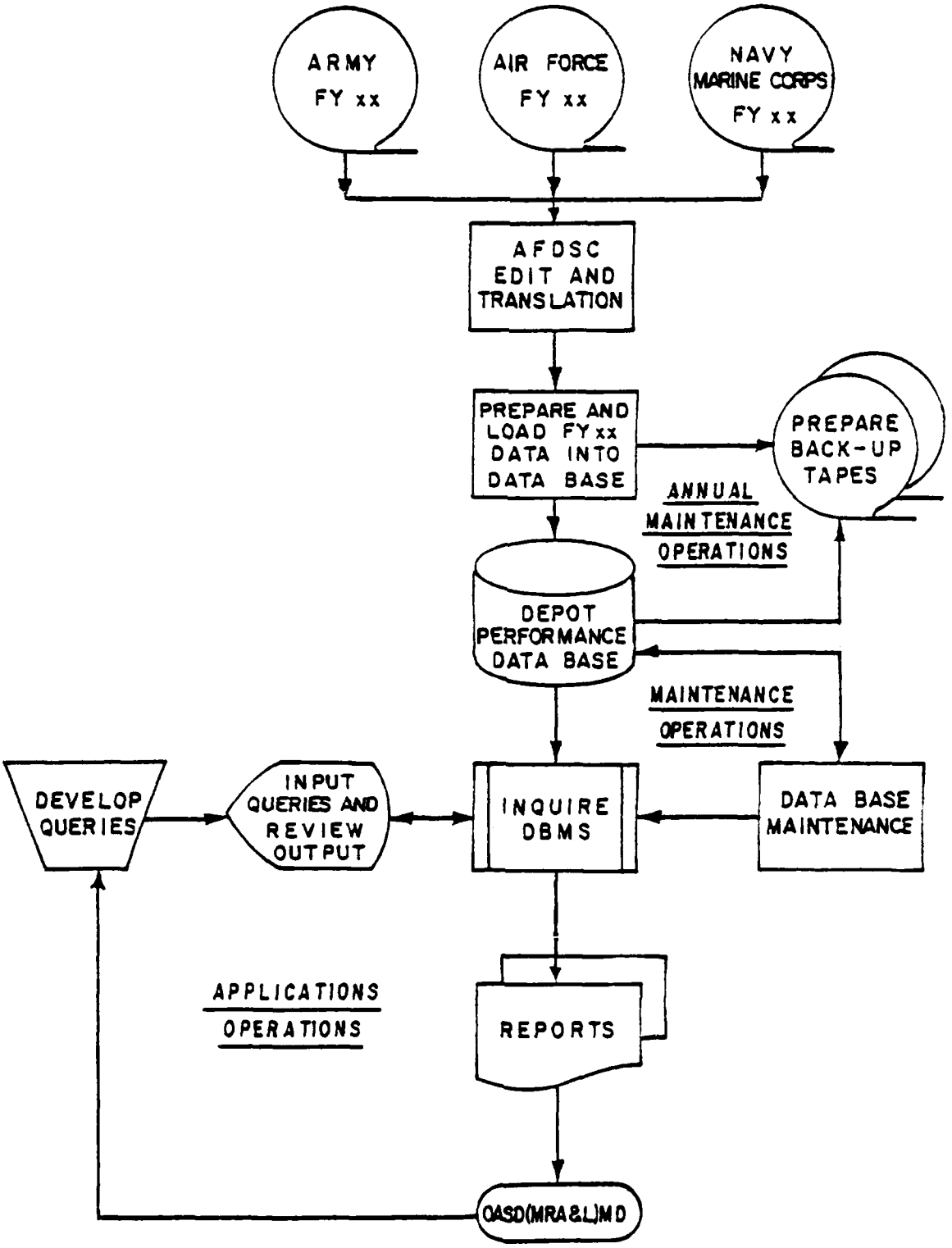
Two maintenance operations "loops" appear next in the figure. The upper loop indicates maintenance operations which must be performed each year, such as loading the data into the Depot Performance Data Base. The INQUIRE DBMS software includes a loader program to aid users in creating the data base. Other annual maintenance tasks include making back-up tapes of both the (translated) Service tapes and the newly created data base, for retention in the AFDSC tape library. For all such tasks, the user will obtain from AFDSC the required disk and tape storage space. Detailed instructions and programs for annual maintenance operations are given in Appendix B.

The second maintenance loop indicates "as necessary" maintenance operations, which the user may perform after loading. INQUIRE utility programs and AFDSC support routines are available to assist in these operations. Appendix C lists data base maintenance routines which have been used in system operations to date.

The final section of the figure illustrates the Maintenance Directorate's use of the system, including annual standard reports and special reports in response to ad hoc requests. For the former, a set of INQUIRE queries has already been developed and saved as cataloged data sets on public (on-line) disk storage space in System K. Instructions for calling and executing these prewritten queries are contained in Section 3.3, Input Procedures.

The ad hoc applications arise when the Maintenance Directorate has special information requirements not met by the standard reports. Developing the queries for these special reports will usually involve the user in an iterative exercise as indicated in the display symbol. For the ad hoc applications, query development may range from minor alterations of existing queries to the development of totally new queries.

FIGURE 2-1. SYSTEM OPERATION



2.3 System Configuration

The Depot Performance DBS operates on an IBM Central Processing Unit Model 3032 (System K, AFDSC) with the OS/VS2 MVS (Multiprogramming Virtual Storage) operating system. All user interactions with the system may be accomplished using remote terminals. System K can interface with asynchronous teletype-compatible devices up to 300 baud (bits-per-second) on a dial-up basis. (1200 baud service is available with special Form 1C justification.) With a terminal, users may access and edit stored job streams, submit jobs for execution, and obtain output. Output may also be directed to printers, either at the user's site or at AFDSC. Hook-up arrangements for terminals and printers with System K can be made through the Directorate of System Support, AFDSC.

Physical storage of the 7220.29 Depot Performance Data Base is on (removable) 3330 magnetic disk packs (direct access storage devices). When the user submits a job requiring access to the 7220.29 data base, JCL statements in the submitted job stream will cause the System K operator to physically mount the pack in a disk drive for on-line processing. System K currently is limited to one removable disk drive. The FY 78 and 79 data bases now fully occupy one 3330 disk pack (AFDSC Volume Serial No. OS2006). (Each 3330 disk pack has a storage capacity of approximately 110 million bytes.) Additional direct access storage space for FY 80 and succeeding year data bases will be required. This space can be obtained by submitting AFDSC Form 1C to AFDSC. With only one drive available for removable disks, just two years of depot performance data can be on-line simultaneously.

The system back-up tapes are AFDSC Series 85xxx or 86xxx tapes. System K has six drives for these nine-track, 1600/6250 bpi (bits-per-inch) standard label tapes. Once tapes are created and catalogued, the user manages them in the AFDSC Tape Library System (TLS) by indicating desired actions on tape library lists, issued and distributed by AFDSC. User requests for tape lists should be directed to AFDSC(GN).

Software required for the Depot Performance DBS is the INQUIRE (Release 10, Version 1) DBMS package, which is currently available on System K. Later releases of INQUIRE, provided they are compatible with Release 10, Version 1, may also be used.

2.4 System Organization

The organization of the Depot Performance DBS is best understood by examining the statements in a typical job stream for an application. Every job stream has JCL statements followed by INQUIRE statements. The JCL statements activate those components of the system which have an administrative or job control function. The INQUIRE statements activate those components of the system which perform the information retrieval functions. They provide necessary parameters and codes for the INQUIRE DBMS and contain the commands which activate the data retrieval, manipulation, and report formatting modules in the DMBS software. (Taken together, the INQUIRE command statements form a query in the Depot Performance DBS.)

From the user's point of view, therefore, the Depot Performance DBS has a two-part organizational structure consisting of job control components and

data handling components. The remainder of the system involves the TSO commands, which are needed to operate on the IBM operating system (OS/VS2 MVS) for System K. These commands are discussed in Section 3.2, Job Initiation Procedures.

2.5 System Capabilities

The capabilities of the Depot Performance DBS are a function of three factors: the nature of the 7220.29 records, the structure of the Depot Performance Data Base, and the information retrieval properties of the INQUIRE user language. Both individually and in combination with one another, these factors determine the ability of the system to meet the information requirements of OASD(MRA&L)MD.

The 7220.29 records cover only completed work in a given fiscal year. Consequently, questions on workload backlog, for example, cannot be answered. On the positive side, the system can answer virtually any question on depot performance which can be posed in terms of the data fields in the 7220.29 records. Section 2.6, The Depot Performance Data Base, describes the data contained in those records.

The second factor affecting system capabilities is the structure of the data base. Since new data are submitted annually, the total Depot Performance Data Base consists of separate, similarly structured data bases, one for each fiscal year. Currently the total data base consists of both a FY 78 data base and a FY 79 data base. This affects the ability of the system to perform multi-year analyses in a fully automated fashion. In some cases, manual analyses of extracted data may be necessary to detect trends over more than one fiscal year.

The third factor affecting system performance involves the information retrieval properties of the INQUIRE user language itself, specifically the commands and subcommands of INQUIRE, and the syntax rules for combining the commands into queries. The vocabulary and syntax of INQUIRE constitute the "rules" which users must follow to retrieve desired information. If the rules are broken, the query will fail to successfully execute. INQUIRE's vocabulary and syntax, however, provide users with considerable power in information retrieval.

Most applications, including the standard report queries already built into the system, are no more complicated than retrieving records based on specified field value conditions (expressed in FIND or SCAN commands utilizing Boolean-type logical statements), sorting the records into categories (again based on field values), and reporting results in the form of tables or lists with appropriate subtotals and totals. INQUIRE is fully equipped to support straightforward applications such as these. In addition, INQUIRE has advanced capabilities to satisfy more complex information requirements, such as a multi-data base option.

As a final remark, not all of INQUIRE's capabilities have been exploited in applications to date. Future users are very likely to find new applications for the system, such as multi-step queries involving temporary data bases and iterative retrievals, and use of the "relational" capabilities provided by INQUIRE's multi-data base options.

2.6 The Depot Performance Data Base

Each record in the data submitted by the Military Services contains 50 items of information and represents a job order completed during the reporting year. (The structure and criteria for establishing job orders are described in the 7220.79 Handbook, pages 310-1 through 310-3.) Figure 2-2 lists the 50 data items included on the submitted 7220.29 records. Appendix D defines the 50 data items.

In the Depot Performance Data Base, each data item defines a field, and each job order defines a logical record. The total data base is made up of separate, similarly structured data bases, one for each fiscal year. A given FY data base contains all the 7220.29 cost and production data reported by the Services for that year. Figure 2-3 defines the relationship between fields in the data base structure and the data items in the submitted records. The columns labeled "Data Base Fields" contain the field names used in the data base. (These are the names used when fields are referenced in queries.)

Each data base field is assigned several descriptive characteristics, such as print format and length, which the DBMS uses in retrieving data and formatting reports. Figure 2-4 lists the attributes of each field in the Depot Performance Data Base. For ease of comparison with the INQUIRE manuals, this figure has the form of a Fields Definition Table. The codes defined at the bottom of the figure are discussed in detail in the INQUIRE Installation and Operations Guide. The "Repetitions" column indicates that all fields in the data base are scalar (single-valued) fields. (INQUIRE has the capability to handle scalar fields or "repeating" (multiple-valued) fields.) The "Stored Length" column tells how many characters are alloted to the field in storage. The "Key" column identifies those fields which are prefix key fields in the data base structure. Different values of these fields are stored in the index file of the data base in entries of the form: FIELDNAME=(value), with one entry for each distinct value, and a pointer to the search file in the data base. The search file contains the addresses of those records which have that value in that key field. The index and associated key fields make it possible for the INQUIRE DBMS to retrieve specific data without having to SCAN the entire set of records in the data base. The key fields indicated have been selected because they are the most useful set of keys for the information desired by the Maintenance Directorate.

At the time of this writing, the Depot Performance Data Base contains the data for FY 78 and 79. The FY 78 data base contains 107,077 records and the FY 79 data base contains 96,704 records. Using these years as a guide, it is expected that each new fiscal year will generate approximately 100,000 records.

2.7 Inputs, Processing, and Outputs

This section provides a start-to-finish description of the input, processing flow, and output of the Depot Performance DBS in a typical application.

FIGURE 2-2. SERVICE REPORTED DATA ITEMS

RECORD IDENTIFICATION

- Record Type
- Quarter Code
- Fiscal Year

FACILITY IDENTIFICATION

- Program Element
- Facility Name or Code
- Inside or Outside U.S. Code
- Owner/Operator Code
- Reporting Facility Code

ITEM/SERVICE/CUSTOMER IDENTIFICATION

- Item Identification Number
- Item Nomenclature
- Standard Inventory Price
- Weapon or Support System Code
- Work Breakdown Structure Code
- Work Performance Category
- Customer Code

LABOR AND COST DATA

- Direct Civilian Labor (Production) Cost
- Direct Civilian Labor (Production) Hours
- Direct Civilian Labor (Other) Cost
- Direct Civilian Labor (Other) Hours
- Direct Military Labor (Production) Cost
- Direct Military Labor (Production) Hours
- Direct Military Labor (Other) Cost
- Direct Military Labor (Other) Hours
- Direct Material Cost - Funded
- Direct Material Cost - Unfunded (Investment Items at Full Price)
- Direct Material Cost - Unfunded (Exchanges)
- Direct Material Cost - Unfunded (Modification Kits)
- Direct Material Cost - Unfunded (Expense)

LABOR AND COST DATA (Cont'd)

- Other Direct Cost - Funded
- Other Direct Cost - Unfunded
- Operations Overhead - Funded
- Operations Overhead - Unfunded
- General and Administrative Expense - Funded
- General and Administrative Expense - Unfunded
- Maintenance Support Costs Organic - Funded
- Maintenance Support Costs Organic - Unfunded

NON-ORGANIC LABOR AND COST DATA

- Contract/Interservice/Non-Depot Maintenance Activity Cost
- Government-Furnished Material (Investment Items at Full Price)
- Government-Furnished Material (Exchanges)
- Government-Furnished Material (Modification Kits)
- Government-Furnished Material (Expense)
- Government-Furnished Services - Funded
- Government-Furnished Services - Unfunded

PRODUCTION DATA

- Total Production Quantity Completed
- Quantity of Completed Items Inducted During Reporting Year
- Quantity of Completed Items Inducted During Year Preceding Reporting Year
- Quantity of Completed Items Inducted During All Other Previous Years
- Work Days in Process

FIGURE 2-3. FIELD AND DATA ITEM RELATIONSHIPS

Data Base Fields	Data Items	Data Base Fields	Data Items
RECTYPE	Record Type "F"	UMATLMK	Direct Material Cost-Unfunded (Modification Kits)
QUARTER	Quarter Code		
FY	Fiscal Year		
PROGELT[a]	Program Element	UMATLXP	Direct Material Cost-Unfunded (Expense)
PROGRAM[a]	Program Element		
SERVICE[a]	Program Element	FOTHER	Other Direct Cost-Funded
FACILITY	Facility Name or Code	UOTHER	Other Direct Cost-Unfunded
IN/OUTUS	Inside or Outside U.S. Code	FOVRHD	Operations Overhead-Funded
OWNROPER	Owner/Operator Code	UOVRHD	Operations Overhead-Unfunded
RPTGFAC	Reporting Facility Code		
ITEMNUMB	Item Identification Number	FG&A	General and Administrative Expense-Funded
ITEMNAME	Item Nomenclature		
PRICE	Standard Inventory Price	UG&A	General and Administrative Expense-Unfunded
SYSTEM	Weapon or Support System Code	CONTRACT	Contract/Interservice/Non-Depot Maintenance Activity Cost
WBS[b]	Work Breakdown Structure Code		
COMMODTY[b]	Work Breakdown Structure Code	GFMII	Government Furnished Material (Investment Items & Full Price)
CATEGORY[b]	Work Breakdown Structure Code		
COMPONET[b]	Work Breakdown Structure Code	GFMXC	Government Furnished Material (Exchanges)
WPC	Work Performance Category	GFMMK	Government Furnished Material (Modification Kits)
CUSTOMER	Customer Code		
CLABRP	Direct Civilian Labor (Production) Cost	GFMXP	Government Furnished Material (Expense)
CLABRPHR	Direct Civilian Labor (Production) Hours	FGFSERV	Government Furnished Services-Funded
CLABRO	Direct Civilian Labor (Other) Cost	UGFSERV	Government Furnished Services-Unfunded
CLABROHR	Direct Civilian Labor (Other) Hours	FMAINSPT	Maintenance Support Costs Organic-Funded
MLABRP	Direct Military Labor (Production) Cost	UMAINSPT	Maintenance Support Costs Organic-Unfunded
MLABRPHR	Direct Military Labor (Production) Hours	PRODQNTY	Total Production Quantity Completed
MLABRO	Direct Military Labor (Other) Cost	TOTLCOST[c]	All Cost Fields
MLABROHR	Direct Military Labor (Other) Hours	QNTREPYR	Quantity of Completed Items Inducted During Reporting Year
FMATL	Direct Material Cost-Funded	QNTPREYR	Quantity of Completed Items Inducted During Year Preceding Reporting Year
UMATLII	Direct Material Cost-Unfunded (Investment Items at Full Price)	QNTOTHYR	Quantity of Completed Items Inducted During All Other Previous Years
UMATLXC	Direct Material Cost-Unfunded (Exchanges)	WORKDAYS	Work Days in Process

[a]This field structure allows the program code and service code to be referenced as separate pieces of information or as one unit.

[b]This field structure allows commodity, category and component to be referenced as separate pieces of information or as one unit

[c]This field was added to each record to improve computational efficiency.

FIGURE 2-4. FIELD DEFINITION TABLE

Field Name	Key	Type	Stored Length	Structure	Repetitions	Print	
						Format	Length
RECTYPE		CHR	1		SCALAR	NB	1
QUARTER		CHR	1		SCALAR	NB	1
FY	PFX	CHR	2		SCALAR	NB	2
PROGELT		CHR	6	BASE	SCALAR	NB	6
PROGRAM		CHR	5	SUBF	SCALAR	NB	5
SERVICE	PFX	CHR	1	SUBF	SCALAR	NB	1
FACILITY	PFX	CHR	14		SCALAR	NB	14
IN/OUTUS		CHR	1		SCALAR	NB	1
OWNROPER		CHR	1		SCALAR	NB	1
RPTGFAC		CHR	5		SCALAR	NB	5
ITEMNUMB	PFX	CHR	13		SCALAR	NB	13
ITEMNAME		CHR	20		SCALAR	B	20
PRICE		PCK	10		SCALAR	I	10
SYSTEM	PFX	CHR	4		SCALAR	NB	4
WBS		CHR	3	BASE	SCALAR	NB	3
COMMODTY	PFX	CHR	1	SUBF	SCALAR	NB	1
CATEGORY		CHR	1	SUBF	SCALAR	NB	1
COMPONET		CHR	1	SUBF	SCALAR	NB	1
WPC	PFX	CHR	3		SCALAR	NB	3
CUSTOMER		CHR	2		SCALAR	NB	2
CLABRP		PCK	8		SCALAR	I	8
CLABRPHR		PCK	8		SCALAR	I	8
CLABRO		PCK	8		SCALAR	I	8
CLABROHR		PCK	8		SCALAR	I	8
MLABRP		PCK	8		SCALAR	I	8
MLABRPHR		PCK	8		SCALAR	I	8
MLABRO		PCK	8		SCALAR	I	8
MLABROHR		PCK	8		SCALAR	I	8
FMATL		PCK	8		SCALAR	I	8
UMATLII		PCK	8		SCALAR	I	8
UMATLIC		PCK	8		SCALAR	I	8
UMATLMK		PCK	8		SCALAR	I	8
UMATLIP		PCK	8		SCALAR	I	8
FOTHER		PCK	8		SCALAR	I	8
UOTHER		PCK	8		SCALAR	I	8
FOVRHD		PCK	8		SCALAR	I	8
UOVRHD		PCK	8		SCALAR	I	8
FG&A		PCK	8		SCALAR	I	8
UG&A		PCK	8		SCALAR	I	8
CONTRACT		PCK	8		SCALAR	I	8
GFMII		PCK	8		SCALAR	I	8
GFMIC		PCK	8		SCALAR	I	8
GFMMK		PCK	8		SCALAR	I	8
GFMIP		PCK	8		SCALAR	I	8
FGFSERV		PCK	8		SCALAR	I	8
UGFSERV		PCK	8		SCALAR	I	8
FMAINSPT		PCK	8		SCALAR	I	8
UMAINSPT		PCK	8		SCALAR	I	8
PRODQNTY		PCK	8		SCALAR	I	8
TOTLCOST		PCK	8		SCALAR	I	8
QNTREFYR		PCK	8		SCALAR	I	8
QNTFRETR		PCK	8		SCALAR	I	8
QNTOTHYR		PCK	8		SCALAR	I	8
WORKDAYS		PCK	4		SCALAR	I	4
BLANK			6		SCALAR	I	5

Abbreviations and Codes:

PFX - prefix key
CHR - character data
PCK - packed numeric data
SUBF - subfield
NB - a default print format code for character data which allows a word to be broken for printing on more than one line
B - a default print format code for character data which specifies that each line end at a blank between words
I - a default print format code for numeric data which indicates that the number should be printed as an integer

Inputs to the system originate with a user at a terminal. (TSO initiation procedures, prior to input, are covered in Section 3.2, Technical Operations.) For a production job, inputs consist of a set of numbered statements typed by the user at a terminal keyboard. As noted in Section 2.4, input consists of JCL and INQUIRE statements.

For the most part, JCL statements do not vary from one production job to the next. Important exceptions are those JCL statements which identify the cataloged data, search, and index files to be accessed in the job. The names of these files depend upon the FY data base(s) being accessed. Accordingly, care must be taken to ensure that the desired FY data base is actually requested.

The INQUIRE statements constitute the query portion of the input. Most queries may be thought of as having three stages: a retrieval stage, a manipulation stage, and an output specification stage. (In the case of multi-data base queries, the retrieval stage will be preceded by INQUIRE statements which create a multi-data base, i.e., a data base whose logical records are linked records from two or more single data bases.) The statements in the retrieval stage are FIND or SCAN commands that specify a set of job order records to be retrieved from the data base, using logical conditions expressed in terms of field values. For example, the statement

FIND FACILITY=LETTERKENNY

would retrieve all records whose facility field contained the character string "LETTERKENNY." (Letterkenny is an Army depot in Chambersburg, Pennsylvania.) In this example, FACILITY is a key field, allowing the use of the FIND command and the "=" symbol. The statement

SCAN TOTLCOST GT 10000

would retrieve all job order records in the data base whose TOTLCOST field contained a number greater than 10,000. SCAN is used when the retrieval is based on non-key fields. It will cause the <u>entire</u> FY data base to be sequentially searched for the desired records. As this is a time-consuming process, it is advisable to use key fields and the FIND command, along with non-key fields, whenever possible.

From the user's point of view, it is important to understand the retrieval stage. It does <u>not</u> retrieve a set of field values, nor does it retrieve information in its final desired form. It retrieves a <u>set of logical records</u> from the data base, which satisfy some set of specified properties. This point is important in relation to the manipulation and output specification stages. Users must recognize that after the retrieval stage they will have a selected set of complete logical records. Thus, once a given number of job order records have been retrieved, they become the universe for operations in subsequent stages of the query. (The HOLD command, however, does allow users to create temporary data bases containing retrieved records and then make a "second" retrieval on the primary set of retrieved records, based on some further criteria not specified in the initial FIND or SCAN statements.)

The manipulation stage follows the retrieval stage of a query. The manipulation stage consists of input statements which either (1) cause retrieved records to be sorted, counted, modified, etc. or (2) cause calculations and other operations to be performed with the field values in the retrieved records.

The final set of input statements in a query will specify the structure and content of the output, including list and table structures, titles and headers, what is to be printed, spacing, etc. Even though all queries have the three stages just described, the statements which make up these stages are not always logically distinct or independent of one another. For example, statements in the manipulation stage may define temporary fields used in the retrieval stage.

Once a complete set of JCL and INQUIRE statements are ready, they are submitted as a batch job using a TSO command. The INQUIRE DBMS software and System K operating system then take over and perform the processing indicated (retrieval, manipulation, and preparation of output). Processing can take anywhere from a few minutes of clock time to several hours, depending on the query and the number of TSO users on System K at the time. Also, System K processing is occasionally interrupted, in which case the job may have to be resubmitted.

Following input and processing, the System K operating system will automatically cause a JOB ENDED message to appear at the user's terminal when a job is completed. If the user signs off before job execution is completed, the operating system automatically saves the output and sends the JOB ENDED message to the user's terminal whenever the user comes back on-line under TSO. The user will then return a TSO command requesting output. If the job has executed successfully, the output will be the desired report; otherwise, the output will be system log messages providing information on where and why the job abnormally terminated. The output will also include accounting information on the cost of the job and how much time it took.

All output reports should be checked for completeness and accuracy. A valuable aid in assessing the completeness of a report is provided by an ITEMS RETRIEVED statement, which the DBMS will automatically print at the end of each report. The value listed indicates the number of job order records retrieved in the execution of the query. When the user knows how many records should have been retrieved (e.g., all the records for a given Service), then the ITEMS RETRIEVED number is a check on the "correctness" of the query and the validity of its output.

SECTION 3. TECHNICAL OPERATIONS

3.1 Gaining Access to System K

Users of the Depot Performance DBS must first obtain access to System K at AFDSC. Prospective users should contact:

Mr. Larry Robertson
Directorate of OSD Systems, AFDSC(GNM)
Telephone: (202) 695-3389; Autovon 22-3389

Mr. Robertson, who was LMI's administrative contact at AFDSC for the Depot Performance DBS project, can assist users in gaining access to the system.

To use System K, users must have an Office of Primary Responsibility (OPR) cost code, a Project (PROJ) code, a submitter ID, and a valid password. To access the cataloged data files and programs which have been established for the Depot Performance DBS, users should use the OPR and PROJ codes: OPR=OS20 and PROJ=N308D. The submitter ID will be the user's initials. (In the discussion below, the submitter ID is denoted XXX.) The user's password will be assigned by AFDSC.

3.2 Initiation Procedures

This subsection describes the sequence of TSO operations the user must perform at a terminal to initiate a session with System K. The AFDSC Users Manual for the IBM 3032 contains additional information on TSO operations with System K.

In the steps below, the instruction "Enter" means press the RETURN key on the terminal after typing the information indicated. Pressing the RETURN key transmits the typed information to the computer.

Step 1. Turn the terminal ON, with switch settings as follows: ON-LINE, HALF-DUPLEX, 300 BAUD, and, if present, AUTO-LINEFEED OFF.

Step 2. Dial 697-5959. Upon receiving a high-pitched tone, place the telephone receiver in the modem attached to the terminal.

Step 3. Press the RETURN key.

Step 4. Enter the three characters TSO.

If System K is operating, you will receive the message ENTER LOGON; otherwise the system will respond with SYSTEM DOWN. If it responds with INVALID-SW-CHARS, repeat Step 4.

Step 5. In response to the ENTER LOGON message, enter LOGON OS20XXX, where XXX is your submitter ID.

The system will respond with the message ENTER CURRENT PASSWORD FOR OS20XXX-, followed by an over-typed line to accept your

password. The OPR code, together with your submitter ID, is your user ID. A user ID of the form OS20XXX permits access to the stored files and programs in the Depot Performance DBS.

Step 6. Enter your password.

The system will respond with ENTER OPR COST CODE AND PROJECT CODE (9 CHAR)--.

Step 7. Enter OS20N308D.

The system uses this combined OPRPROJ code to complete your identification and validation as a user. The system will respond to your OPRPROJ code with a brief listing of system information followed by the message READY.

The READY message indicates a successful log-on as a TSO user, and the system is ready to accept further TSO commands. To obtain a description of TSO commands directly from the system (once you have received a READY message), enter HELP HELP. In the course of any session, when the READY message appears, it is as if you had just completed the initiation procedure just described. In order to sign off the system at the conclusion of a session, enter LOGOFF after a READY message.

3.3 Input Procedures

3.3.1 General

Once the READY message appears, the user can access and exercise the Depot Performance DBS. The procedures described in this subsection will permit users to begin using the system. With experience, users will find that they have considerable flexibility beyond the procedures described here. Also, users may wish to develop prestored command lists (CLISTS) for the procedures described below, as a possible time-saving device.

The Depot Performance DBS includes a set of prewritten job streams, for both applications and data base maintenance jobs, which have been saved and cataloged on System K. These job streams are physically stored on public disk space (a permanently mounted (on-line) disk pack) and can be accessed by the System K operating system in response to user-submitted TSO commands. The job streams are self-contained (i.e., they include both JCL and INQUIRE statements) and can be used as written or modified, depending on the application. For virtually all system tasks, users will find it easiest to first access a saved job stream and then modify (EDIT) it to suit their needs. Any new job streams developed by the user (including modified streams) can be added to the set of prewritten jobs for future use.

3.3.2 Calling a Saved Job Stream

To call a prewritten job stream, the user must provide the system with the name of the job stream as it appears in the system catalog. The Depot Performance DBS job streams are stored in a partitioned data set (PDS) called 'OS2001U.N308D.KEN', which for convenience will be referred to as just KEN.

To obtain a listing of the names of the job streams stored in KEN, enter SHOWDIR 'OS2001U.N308D.KEN', following receipt of READY. Currently there are 35 members in KEN. (Appendices A, B, and C provide further information on these prewritten job streams, including listings.)

The job stream in KEN called QUERY79 will be used to illustrate the procedure for calling a saved job stream. QUERY79 provides a table of direct costs by program element and commodity for the Army's FY 79 depot maintenance program.

Step 1. Following receipt of READY, enter
EDIT 'OS2001U.N308D.KEN(QUERY79)' CN.

The system will respond with the message EDIT. The system is now in the EDIT mode under TSO, and the requested member in KEN is available for the user's next action.

Step 2. Enter LIST, or, just L.

In response, the system will print a listing of the statements in QUERY79. (Figure 3-1 in Section 3.3.3, Sample Inputs, lists these statements.)

If the user expects to modify the retrieved job stream, the character V (for VERIFY) should be entered prior to Step 2. The system will then automatically return the latest version of any line modified in the EDIT mode.

If no changes are desired in the prewritten statements, then they may be submitted as a job with Step 3a. If changes are to be made, go to Step 3b.

Step 3a. Enter SUB *.

The system will respond with the message ENTER JOBNAME CHARACTER(S)-. Following Step 3a, go to Step 4.

Step 3b. To change or modify a line, enter the character C, blank, the line number, blank, the symbol /, the exact portion to be changed, the symbol /, the desired change exactly as it should appear, and the symbol /.

The symbol ? may be used in place of / if / is used in the change itself.

If a V has been entered following receipt of EDIT, then the changed line will be returned automatically. Otherwise, to examine a line, enter L followed by the line number.

To delete a line, enter DELETE followed by the line number. To delete a consecutive series of lines, e.g., lines 190 through 230, enter DELETE 190 230. After desired changes have been made, go to Step 3a.

Step 4. Enter any alpha/numeric character desired, e.g., A.

The system will respond with the message JOB OS20XXXA(JOBxxxxx)

SUBMITTED, where xxxxx denotes the number assigned by the operating system to the job. Since more than one job may be submitted in a given session, different jobname characters should be assigned to each job. This practice will also aid in identifying outputs.

This concludes the general description of input procedures necessary to submit a job. For further information on TSO commands available in the EDIT mode, enter HELP EDIT, following a READY. To return to the READY mode from the EDIT mode, enter END. Important Note: If a job stream has been modified under EDIT, the system will respond to END with a message asking SAVE OR END before returning to the READY mode. Enter END again to return to the READY mode. This second END causes any modifications to be "forgotten," and the initially retrieved job stream to be saved in its original form. To SAVE and catalog a new or modified job stream as a new member of KEN, enter SAVE 'OS2001U.N308D.KEN(xxxxxxx)', where xxxxxxx denotes the name chosen for the new job stream. If a message indicating a lack of space in KEN is received, see HELP COMPRESS.

3.3.3 Sample Inputs

This subsection describes sample inputs for both application and data base maintenance jobs. The user will note in both types of jobs that the first step in preparing input is to call a saved job stream as described in the preceding section.

Example 1. Input for a Query

Figure 3-1 lists the JCL and INQUIRE statements in the QUERY79 job stream. The statements shown are a typical input stream for an ad hoc application job in the Depot Performance DBS. Note that, as indicated by the first (unnumbered) line in Figure 3-1, this job stream was obtained by entering EDIT 'OS2001U.N308D.KEN(QUERY79)' CN.

The JCL statements for this job are contained in lines 10-150. With the exceptions noted in the next paragraph, these JCL statements are used in any application job in which the user submits an INQUIRE query as part of the job. Different JCL statements are required when the user applies certain "macro" options (discussed later in this section), and when certain kinds of data base maintenance jobs are to be performed (also discussed later).

In accordance with IBM JCL syntax rules, every JCL statement must be identified with the double slash (//) in columns 1 and 2, or, in some cases a slash and asterisk (/*). In the first JCL statement (line 10), note that the submitter ID CHH appears. Future users will have their own three character ID to replace CHH. Also, the name HANKS will be replaced by the last name of the user, as registered with AFDSC. The user should also check the JCL statements which identify the particular FY data base to be accessed in the job (lines

FIGURE 3-1. SAMPLE INPUT FOR AN APPLICATION

```
EDIT 'OS2001U.N308D.KEN(QUERY79)' CN
EDIT
L


00010 //OS20CHH JOB (OS20,N308D,15U),HAWKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=R,MSGCLASS=H
00030 //JOBLIB  DD DSN=SYS1.INQUIRE.LINKLIB,DISP=SHR
00040 //INQBATCH EXEC PGM=INQUIRE1,REGION=800K,
00050 // PARM='/NM,SHR,SM=150000,T=60K,P=55,L=132'
00060 //REPORT DD SYSOUT=H
00070 //SYSPRINT DD SYSOUT=H
00080 //SORTWK DD UNIT=SYSDA,SPACE=(CYL,(10,5))
00090 //SYSLIB DD DUMMY
00100 //PLIDUMP DD SYSOUT=H
00110 //DATAFIL DD DSN=OS2001U.N308D.COSTAC79.IT5.DATA,DISP=SHR
00120 //INXFIL DD DSN=OS2001U.N308D.COSTAC79.IT5.INDEX,DISP=SHR
00130 //SRCHFIL DD DSN=OS2001U.N308D.COSTAC79.IT5.SEARCH,DISP=SHR
00140 //SROVFIL DD DUMMY
00150 //SYSIN DD *
00160 OPTION ENDMINUS 8.
00170 .
00180 ALLOCATE WOOP +100%, WOTX +100%.
00190 FIND SERVICE=A AND CUSTOMER CONTAINS 7A AND (COMMODTY IS
00200 (A,B,C,D,E,F,G,H,K,L) SET COL OF A),
00210  DEFINE A TABLE (SETB TOTAL, FUNDED UNFUNDED TOTLCOST, 9)
00220 B TEXT (AIRCRAFT AUTO VEHICLES CONSTRUCT CON/ELEC MISSILES SHIPS
00230 WEAPNMUN GENERAL OTHER TOTAL) C TEXT (FUNDED UNFUNDED TOTAL), COMPUTE
00240 FUNDED (CLABRP + CLABRO + MLABRP + MLABRO + FMATL + FOTHER +
00250 FOVRHD + FG&A + CONTRACT + FOFSERV + FMAINSPT) UNFUNDED (UMATLII
00260 + UMATLIC + UMATLMK + UMATLIP + UOTHER + UOVRHD + UG&A + GFMII +
00270 GFMIC + GFMMK + GFMIP + UOFSERV + UMAINSPT),
00280 HEADER 'FISCAL YEAR 1979' 'ARMY'
00290 'DIRECT (7A) COSTS BY PROGRAM ELEMENT AND COMMODITY' '($000)', TAB,
00300 TITLE B R/A, BREAK AFTER PROGRAM SKIP 'PROGRAM ELEMENT '
00310 PROGRAM SKIP C TOTAL OF A 11 * (K 9).
00320 /*
END OF DATA


END
READY
```

110, 120, and 130). In this example, the FY 79 data base is referenced. The files in the FY 79 data base have the data set names (DSN) indicated:

OS2001U.N308D.COSTAC79.IT5.DATA
OS2001U.N308D.COSTAC79.IT5.INDEX
OS2001U.N308D.COSTAC79.IT5.SEARCH

If the user wishes to apply this query to the FY 78 data base, then the 79 in each of these names should be changed to 78. (The FY 78 files have the same names except that 79 is replaced with 78.) This change may be accomplished in the EDIT mode by entering:

C 110 130 /79/78/ALL

Additional information on JCL statements may be obtained from the AFDSC and IBM JCL references cited in Section 1.2.3. The INQUIRE parameters which appear in line 50 are discussed in Appendix B of the INQUIRE User Language Tutorial.

The remaining statements in Figure 3-1 (lines 160-310) are INQUIRE statements. (Line 320, containing /*, is a termination-of-data control statement and should be included as the last line in any application job containing a query.) The three lines 160, 170, and 180 are INQUIRE statements which provide operational parameters to the DBMS. The INQUIRE User Language Tutorial contains information on these administrative commands in Chapter VIII, Operational Administration.

The actual query is contained in lines 190-310. Lines 190 and 200 are the retrieval portion of the query; lines 210-270 are the manipulation portion (in which a table structure is defined and computations performed), and lines 280-310 are the output specification portion.

As described in Section 3.3.2, the QUERY79 job stream may be submitted as written. (The output report of this query is displayed in Figure 3-6.) Suppose, however, the user desires to modify the query. At one extreme, for example, the user may replace the entire query by entering:

```
DELETE 190 310
```

If a V had been entered after the EDIT message, then the system would automatically return the last remaining line in the program, in this case line 180. Following the DELETE, the user would insert the new query by entering, a line at a time, the INQUIRE statements in the new query. Each line must be numbered, of course. (Line numbers may be generated automatically by entering INPUT following an EDIT. To return to the EDIT mode from the INPUT mode, press the RETURN key on the terminal twice.) As a user-oriented language, INQUIRE requires only a minimal amount of formatting in the composition of queries. Acceptable formats are described in the INQUIRE User Language Tutorial.

At the other extreme, the user may want to use the same query, but applied to Air Force records for FY 79, instead of Army records. (The retrieval criterion in line 190, SERVICE=A, restricts the query to Army records only.) In this case, lines 190, 280, and 290 should be be changed:

```
C 190 /=A/=F/
C 190 /7A/7F/
C 280 /ARMY/AIR FORCE/
C 290 /7A/7F/
```

(Note: F is the field value for Air Force in the SERVICE subfield of the PROGELT field.)

With these changes, the modified query may be submitted as input (see Steps 3a and 4 in the preceding Section 3.3.2).

Example 2. Input for Standard Reports

The capability to produce standard summary reports using abbreviated sets of input statements (as opposed to full queries) has been built into the Depot Performance DBS. This has been accomplished using INQUIRE's "macro" operations. In a macro job, a single word (a macro), followed by certain parameters, is inserted after a JCL stream and submitted as input. The DBMS then automatically executes the predefined query associated with the macro and generates the desired report.

Figure 3-2 displays an output report generated by one built-in macro. The input statements for this macro are listed in Figure 3-3.

FIGURE 3-2. OUTPUT FROM A MACRO

PAGE 1

01/28/81

FISCAL YEAR 1979

ARMY

TOTAL DEPOT MAINTENANCE COST ($000)

	FUNDED$	UNFUNDED$	TOTAL$
AIRCRAFT	246,882	38,967	285,850
AUTOMOTIVE	52,863	2,018	54,881
VEHICLES	261,405	23,472	284,877
CONSTRUCTION	12,080	354	12,434
COMMUNICATIONS/ELECTRONICS	123,973	12,932	136,906
MISSILES	152,647	16,500	169,147
SHIPS	10,068	89	10,157
WEAPONS&MUNITIONS	82,524	4,017	86,541
GENERAL	49,353	1,343	50,697
OTHER	17,503	1,147	18,651
TOTAL	1,009,301	100,842	1,110,144

ITEMS RETRIEVED 12324

The macro appears in line 190, TOTLBDGT. The query associated with this macro has been permanently stored in a separate PDS on the (on-line) public disk pack which holds the KEN data set. The macro PDS is called 'OS2001U.N308D.MACRO'. (Note line 90 in the JCL.) A listing of the query associated with TOTLBDGT may be obtained by entering:

EDIT 'OS2001U.N308D.MACRO(TOTLBDGT)' CN

FIGURE 3-3. INPUT FOR A MACRO

```
EDIT 'OS2001U.N308D.KEN(MACRUN2)' CN
EDIT
L


00010 //OS20CHH JOB (OS20,N308D,15U,200),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=R,MSGCLASS=H
00030 //JOBLIB  DD DSN=SYS1.INQUIRE.LINKLIB,DISP=SHR
00040 //INQBATCH EXEC PGM=INQUIRE1,REGION=600K,
00050 // PARM='/NM,SN=150000,T=60K,P=55,L=132,MACRO'
00060 //REPORT DD SYSOUT=H
00070 //SYSPRINT DD SYSOUT=H
00080 //SORTWK DD UNIT=SYSDA,SPACE=(CYL,(10,5))
00090 //SYSLIB DD DSN=OS2001U.N308D.MACRO,DISP=SHR
00100 //PLIDUMP DD SYSOUT=H
00110 //DATAFIL DD DSN=OS2001U.N308D.COSTAC79.IT5.DATA,DISP=SHR
00120 //INXFIL DD DSN=OS2001U.N308D.COSTAC79.IT5.INDEX,DISP=SHR
00130 //SRCHFIL DD DSN=OS2001U.N308D.COSTAC79.IT5.SEARCH,DISP=SHR
00140 //SROVFIL DD DUMMY
00150 //SYSIN DD *
00160 OPTION ENDMINUS 8, NOAUTOMAC.
00170 .
00180 ALLOCATE WDOP +120%, WDTX +120%.
00190 &TOTLBDGT(A,ARMY,1979)
00200 /*
END OF DATA
```

Figure 3-4 identifies the 12 standard summary reports which may be obtained with macros in the Depot Performance DBS. Each macro call word must be accompanied by three parameters (with the exception of HISYS, which requires more), and preceded by an ampersand (&).

Complete job streams for the macros in the Depot Performance DBS are available in the KEN data set. The member names in KEN for macro job streams are MACRUN, MACRUN1, and MACRUN2. The macros ACTYCMDT, CONTRCST, DEPOTCST, and FACCMDT, for example, may be accessed through KEN by entering:

EDIT 'OS2001U.N308D.KEN(MACRUN)' CN

By examining the MACRUN job stream in KEN, the user may note that these four different jobs may be input to the system at one time.

Example 3. Input for Loading a Data Base

This example describes the input procedure for loading a new FY data base. Recall that a loader program is used to input the Service-submitted 7220.29 data into the data base. Figure 3-5 lists the loader job stream. (Note that it is obtained from the KEN data set with the member name LOAD.) This job stream was used to load the FY 79 data base. Several parameters in

FIGURE 3-4. MACROS FOR STANDARD SUMMARY REPORTS

MACRO CALL WORD	REPORT DESCRIPTION
ACTYCMDT(_____, _____, _____) Service* Code, Service Name, FY	Total Service Depot Maintenance Cost by Facility and Commodity
CONTRCST(_____, _____, _____) Service Code, Service Name, FY	Cost Breakdown by COCO Facility
DEPOTCST(_____, _____, _____) Service Code, Service Name, FY	Cost Breakdown by GOGO Depot Maintenance Facilities
FACCMDT(_____, _____, _____) Service Code, Service Name, FY	Total Cost by Facility and Commodity
HISYS(_____, _____, _____, _____, _____, _____, _____, Service Code, Commodity Code, System Code, Commodity Code, System Code, Commodity Code, System Code _____, _____, _____, _____, _____, _____, _____, Commodity Code, System Code, Commodity Code, System Code, Commodity Code, System Code, Commodity Code _____, _____, _____, _____, _____, _____, _____, System Code, Commodity Code, System Code, Commodity Code, System Code, Commodity Code, System Code _____, _____) Service Name, FY	Total Cost by Facility and Selected WPC for Designated Weapon Systems
INTERSER(_____, _____, _____) Service Code, Service Name, FY	Cost Breakdown by GOGO Other Facilities (Interservicing)
NONDEPOT(_____, _____, _____) Service Code, Service Name, FY	Cost Breakdown by GOGO Non-Depot Maintenance Facilities
PECBDGT(_____, _____, _____) Service Code, Service Name, FY	Funded and Unfunded Cost by Program Element Code
STATISTI(_____, _____, _____) Service Code, Service Name, FY	Selected Depot Performance Statistics
SYSWPC(_____, _____, _____) Service Code, Service Name, FY	Total Cost by Weapon System and Non-Maintenance Support Work Performance Categories
SYSWPCMS(_____, _____, _____) Service Code, Service Name, FY	Total Cost by Weapon System and Maintenance Support Work Performance Categories
TOTLBDGT(_____, _____, _____) Service Code, Service Name, FY	Funded and Unfunded Cost by Commodity

*Service Codes are: A for Army, N for Navy, M for Marine Corps, and F for Air Force.

FIGURE 3-5. THE LOADER PROGRAM

```
EDIT   DS2001U.M300D.MEM=LOAD>   CN
EDIT
E


00010 //DS20CMM JOB (DS20,M300D,15U,30,70),MSGLEVEL=(1,1),MSGCLASS=H,
00015 //  CLASS=A,NOTIFY=DS20CM
00020 //JOBLIB  DD DSN=SYS1.INQUIRE.LINKLIB,DISP=SHR
00030 //LOAD EXEC INQLOAD,APPL=DS2001U,PROJ=M300D,ENTNAME=DSTFAC79,ITEM=
00040 //  INTNAME=DSTFN679,KEYLEN=23,RLREC=93,INVREC=3,BYRECS=77,
00050 //  SPRECS=002,SPCVOL=DS2001,INVVOL=DS200S,REGION=400K
00060 //  DATPARM='CREATE,DIRECT',BOFRMB=,MOVEVL=,CREATE=,,,INVTRC=50,
00070 //  IN=,SRCSPC=1063,DATSPC=3950,SPCVOL=,SPCSPC=37,,SPCVOL=DS2001,
00080 //    DSKTYPE=2314,DATVOL=DS200,DATEXT=300,DATTIME=40
00081 //DAT.RADISK DD DSN=DS2001U.M300D.REJECT,DCB=,RECFM=FB,BLKSIZE=2990,
00082 //  LRECL=259,UNIT=231,VOL=SER=DS2001,DISP=,NEW,CATLG,DELETE),
00083 //  SPACE=(7298,(200,1),,RLSE)
00100 //DAT.DATAFIL DD DSN=DS2001U.M300D.DSTFAC79.FT4.DATA,
00110 //  UNIT=(2314,2),VOL=,PRIVATE,RETAIN,SER=,DS200,,DS2007),,
00120 //  DISP=,NEW,CATLG,DELETE),,SPACE=(7298,(3950,300),,RLSE),
00130 //  DCB=,RECFM=,DSORG=DA,BLKSIZE=7298)
00140 //DAT.FILE00 DD DSNAME=,SHR2U.M300D.PACKA79,UNIT=TAPE6,
00150 //  VOL=SER=006146,DCB=,RECFM=FB,BLKSIZE=2990,LRECL=259,DEN=,,DISP=OLD
00155 //           DD DSNAME=,SHR2U.M300D.PACKA79,UNIT=TAPE6,
00156 //  VOL=SER=006023,DCB=,RECFM=FB,BLKSIZE=2990,LRECL=259,DEN=,,DISP=OLD
00157 //           DD DSNAME=,SHR2U.M300D.PACK2679,UNIT=TAPE6,
00158 //  VOL=SER=006150,DCB=,RECFM=FB,BLKSIZE=2990,LRECL=259,DEN=,,DISP=OLD
00160 //DAT.SYSIN DD *
00170 RECTYPE  F   1
00180 QUARTER  F   1
00190 FY       FPD 2
00200 PROSELT  F   6
00210 PROGRAM  F   3          $PROSELT 1
00220 SERVICE  FPD 1          $PROSELT 6
00230 FACILITY FPD 10
00240 INQUIRS  F   1
00250 OWNROPER F   1
00260 PCTSFAC  F   5
00270 ITEMNUMB FPD 13
00280 ITEMNAME F   20   B
00290 PRICE    P   9
00300 SYSTEM   FPD 4
00310 WBS      F   3
00320 COMMODTY FPD 1          SWBS      1
00330 CATEGORY F   1          SWBS      2
00340 COMPONET F   1          SWBS      3
00350 WPC      FPD 3
00360 CUSTOMER F   2
00370 CLABAP   P   5
00380 CLABAMP  P   5
00390 CLABAQ   P   5
00400 CLABAQMP P   5
00410 RLABAP   P   5
00420 RLABAMP  P   5
00430 RLABAQ   P   5
00440 RLABAQMP P   5
00450 FMATL    P   5
00460 UMATLII  P   5
00470 UMATLXG  P   5
00480 UMATLMM  P   5
00490 UMATLXP  P   5
00500 FOTHER   P   5
00510 UOTHER   P   5
00520 FOVHHD   P   5
00530 UOVHHD   P   5
00540 F66A     P   5
00550 U66A     P   5
00560 CONTRACT P   5
00570 SPNII    P   5
00580 SPMC     P   5
00590 SPMM     P   5
00600 SPMP     P   5
00610 FSRSERV  P   5
00620 USRSERV  P   5
00630 FMAINSPT P   5
00640 UMAINSPT P   5
00650 RQUOANTY P   5
00660 TOTLCOST P   9
00670 INTRSERV P   5
00680 INTRSEVA P   5
00690 INTOTHER P   5
00700 WORKDAYS P   3
00710 BLANK    H   9
00720 END
00730 /*
00740 //
END OF DATA
```

the loader job stream are computed from the data being loaded. Appendix B describes how to compute these parameters and to use the loader job stream.

Other data base maintenance routines include making tape copies, converting numeric data from unpacked to packed format, inserting the TOTLCOST field into every record, and preparing back-up tape copies of data on disks. Job streams for each of these tasks are stored in the KEN data set under the member names COPY, PACK, TOTLCOST, and BACKUP. Appendix B contains instructions on their use.

As was noted previously, the user's first step is to obtain a job stream from the KEN data set. Appendices A, B, and C list all queries and routines stored in KEN; they also provide member names, descriptions of the output, and listings of the INQUIRE statements in the job streams. By using the job streams stored in the KEN data set, users will save considerable time in preparing input for the Depot Performance DBS.

3.4 Output Procedures

3.4.1 General

Once a job has been submitted to the Depot Performance DBS, the system performs the indicated processing and then places output in an output queue, awaiting instructions from the user. System users may receive output at their terminal or route it to a printer. The procedures to accomplish these actions are discussed in this section.

3.4.2 Obtaining Output

The procedures to obtain output from a job are quite simple. Recall that every submitted job is assigned a jobname made up of the user ID immediately followed by a jobname character supplied by the user. (See Steps 3a and 4 in Section 3.3.2.) With the user ID OS20XXX and the jobname character Z, for example, the jobname would be OS20XXXZ. When this job is completed, the system prepares a message indicating the job has ended and sends it to the user's terminal. This message would look like:

```
$HASPjjj JOB yyy OS20XXXZ ENDED CN(aa)
```

where yyy denotes the job number which the system assigned to the job.

To obtain the output from this job at a terminal, the user enters:

```
OUT OS20XXXZ
```

This output request may be entered under either the READY or EDIT mode. Once entered, however, the user will then be in the OUTPUT mode. (To return to the EDIT or READY mode, press the BREAK key on the terminal.) In response to the output request, the system will print the job output at the terminal.

If the user desires to obtain the output at a high speed printer, the following procedure is used. AFDSC will assign a remote station ID number to the user's printer, say 05. To obtain the output at that printer, the user enters:

```
OUT OS20XXXZ DEST(RMT05)
```

Users may also examine their output at a terminal and then route it to a printer. For information on this procedure enter HELP OUTP.

3.4.3 Output Contents

Every job submitted to the system will produce output of some form, even when the job fails. In the case of job failures, the output will consist of system log messages, or perhaps INQUIRE error messages. Regardless, the procedures described in the preceding section will enable the user to receive the output.

The output of any job in the Depot Performance DBS will fall into one of the following three categories. For application jobs which successfully execute, the output will consist of tables and stratified lists containing various aggregations of the 7220.29 data. (Figure 3-6 shows the table generated by the QUERY79 query.) In addition to the report itself, the system will provide information on how the job was executed, how much time it took, and how much it cost.

The second category of output is for data base maintenance jobs which successfully execute. The format and content of output for these jobs can vary widely. In general, however, the output will consist of system messages indicating successful completion, along with quantitative and qualitative information relevant to the maintenance job which was performed. The loader program, for example, will automatically produce considerable information on the loaded data base. (The output from a successful load should be saved for future reference; the information it provides on the records loaded, including the number of records containing distinct values in key fields, can be very useful, both in formulating queries and in validating results.)

The third category of output occurs when a job (application or data base maintenance) fails to successfully execute. Jobs can fail for a variety of reasons. There may be a JCL error in the JCL input stream. The output will then contain a JOB FAILED-JCL ERROR message, along with diagnostic information to aid the user in correcting the error. In this instance, the IBM Messages and Codes references should be consulted. The IBM Systems Support Division at AFDSC can also assist users to correct JCL errors.

Jobs may also abnormally terminate (ABEND) due to user error, operator error/action at AFDSC, or system action. The output in this case will be system log messages and diagnostic information. Again, the IBM Messages and Codes references, and AFDSC's System Support Division can be of assistance.

Finally, jobs may fail to successfully execute because there is an error in the INQUIRE query. (This failure can occur only when the job uses the INQUIRE DBMS software, and successfully executes to activation of the DBMS.) In this instance, the output will contain INQUIRE error messages, which can be used to debug the query. Appendix D in the INQUIRE User Language Tutorial explains these error messages.

FIGURE 3-6. TYPICAL OUTPUT REPORT
(Produced by the QUERY-79 Program)

PAGE 1

01/28/81

FISCAL YEAR 1979

ARMY

DIRECT (7A) COSTS BY PROGRAM ELEMENT AND COMMODITY
($000)

	AIRCRAFT	AUTO	VEHICLES	CONSTRUCT	COM/ELEC	MISSILES	SHIPS	WEAP&MUN	GENERAL	OTHER	TOTAL
PROGRAM ELEMENT 72007											
FUNDED	154,789	34,172	200,274	7,142	79,466	103,221	960	23,070	25,887	10,977	639,962
UNFUNDED	30,997	1,821	10,890	354	11,968	12,889	87	2,642	1,315	1,108	74,075
TOTAL	185,786	35,993	211,165	7,497	91,435	116,111	1,047	25,712	27,203	12,085	714,038
PROGRAM ELEMENT 72207											
FUNDED	28,732	2,072	31,697	0	2,702	30,147	7,180	3,128	10,461	356	116,479
UNFUNDED	6,805	194	12,549	0	0	3,406	0	1,286	0	0	24,243
TOTAL	35,538	2,267	44,246	0	2,702	33,554	7,180	4,415	10,461	356	140,722
PROGRAM ELEMENT 72897											
FUNDED	981	255	788	116	861	669	0	422	492	171	4,759
UNFUNDED	0	0	0	0	3	0	0	0	0	0	5
TOTAL	981	255	788	116	865	669	0	423	493	171	4,764
PROGRAM ELEMENT 78017											
FUNDED	46,698	16,363	28,473	4,820	34,469	17,057	1,927	54,890	12,348	5,332	222,381
UNFUNDED	305	2	22	0	121	117	2	1	20	1	595
TOTAL	47,004	16,366	28,495	4,821	34,590	17,175	1,929	54,892	12,368	5,334	222,977

ITEMS RETRIEVED 11556

3.5 Recovery and Error Correction Procedures

Users should consult the INQUIRE, AFDSC, and IBM references when correcting errors. For additional assistance in correcting JCL errors and other problems relating to the System K operating system, users should contact the IBM Systems Support Division (SFI) at AFDSC (Tel. 696-7430/1274). For AFDSC

INQUIRE procedure problems, users should contact Mr. Edward Boback, Directorate of OSD Systems, AFDSC (Tel. 697-1229). For assistance in correcting programming errors in the INQUIRE language, users should contact Infodata Systems Inc. via the INQUIRE Hotline: Tel. (703) 578-0008.

Recovery capabilities should be protected by preparation of back-up tapes for any files and data which the user wishes to preserve. Infrequently, disk packs are damaged, and back-up tapes can save considerable time in restoring system capability. Finally, users are encouraged to SAVE debugged queries in the KEN data set for future reference and application. Back-up tapes for files on public disk packs are prepared daily by AFDSC and held for five days.

3.6 Utilization of System Outputs

As an information retrieval system, the Depot Performance DBS generates system outputs which the Maintenance Directorate will use to expand and deepen its visibility of depot maintenance programs in the DoD. Consequently, system outputs will be used to evaluate depot maintenance programs and their management, and to prepare briefings and reports. LTC Larry Dix (Tel. 695-0337) is the point of contact within the Maintenance Directorate for the Depot Performance DBS.

SECTION 4. QUERY DEVELOPMENT

4.1 General

The process of developing queries is critical to the effective use of the Depot Performance DBS. This process is characterized by two questions: (1) Can the information requested be derived from the data base? (2) If it can, then how can INQUIRE accomplish that derivation? The first question involves determining whether an end user's question can be answered with the data in the 7220.29 records. The second question involves formulating an INQUIRE query to extract and display the desired information. Both tasks require analysis by the user.

This section provides general guidance for each stage of query development, not detailed instructions to cover every application.

4.2 The Information the Data Base Can Provide

The job order records in the depot performance data base provide data falling into the following categories:

Record Identification	Labor and Cost Data
Facility Identification	Non-Organic Labor and Cost Data
Item/Service/Customer Identification	Production Data

Different types of information can be obtained from these data:

a. Summary Information - overall program cost and production summaries.

b. Detailed Information - special topic information obtained by sorting and subtotaling on preselected field values of interest.

c. Comparative Information - listings which allow comparisons of performance between Service, facility, weapon system, etc.

d. Indirect Information - reports which, while not explicitly answering an end user's question, nevertheless indicate a possible pattern of activity.

e. Statistical Information - data which are not explicitly present in the data base, but which can be computed.

Examples of information in these categories would be:

a. The overall program summaries contained in the macro reports.

b. The cost of F-100 engine overhauls in FY 79.

c. A listing of all Federal Stock Number items which were repaired at two or more facilities in FY 79, with costs included for comparison.

d. A listing of items for which the average cost of repair exceeded the procurement cost. (This is answerable only indirectly from the data, because the Standard Inventory Price field serves only as an indicator of procurement cost--not an accurate measure.)

e. Average overhead rate at Army depots in FY 79 expressed as a percentage of total depot costs.

The common thread in these examples is that the desired information can be expressed in terms of the data fields in the 7220.29 records. This criterion determines whether or not an information request can be accommodated by the Depot Performance Data Base.

4.3 Query Capabilities

4.3.1 Basic Capabilities

The second stage in query development is to construct a query which will extract the relevant records, manipulate the data appropriately, and produce the desired report. This is a technical problem in the use of the INQUIRE language. It is different from the data versus information problem because the user is now limited by INQUIRE's capabilities. This subsection outlines those capabilities, and Section 4.4 following provides guidance on query formulation. For further information on both topics, the user should consult the INQUIRE User Language Tutorial.

As an information retrieval language, INQUIRE is both flexible and powerful. Experience has shown that if a retrieval can be logically conceived and formulated in English, then it can be formulated in INQUIRE as well. (In some cases, however, the logical framework in English does not translate directly into a similar framework in INQUIRE.)

INQUIRE's query capabilities depend upon what can be accomplished in the three stages of a typical query's structure: retrieval, manipulation, and output specification. In the retrieval stage, INQUIRE allows users to extract records from the data base using selection criteria, which may take a variety of logical forms. In general, these criteria will consist of keys or field value specifications strung together using logical connectors. For example, if a user wished to examine USAF aircraft engine overhauls at Oklahoma City and San Antonio, the following command would retrieve the desired records:

```
FIND SERVICE=F AND COMMODTY=A AND FACILITY CONTAINS OKLAHOMA OR FACILITY
CONTAINS ANTONIO AND WPC CONTAINS A AND COMPONET EQ 2
```

(In the WPC field, the letter A is the code for overhaul; in the COMMODTY field, A is the code for aircraft; in the COMPONET field, 2 is the code for engine.)

Following retrieval, INQUIRE allows the user to manipulate the data. Calculations with numeric fields may be performed and new fields may be defined for each of the retrieved records. For example, the statement:

```
COMPUTE AVG (TOTLCOST / PRODQNTY)
```

would create a field called AVG for each retrieved record. The value in this field would be the total cost of the work in the record divided by the production quantity. INQUIRE's sorting and subtotaling capabilities are also in the manipulation stage, but they affect output format as well. With the BREAK and SORT commands, users can sort (based on field values) retrieved records into groups, subgroups within groups, etc. Within these nested sorts, subtotals may be generated at each level.

Finally, in the output specification stage, users have the capability to organize generated information into reports, usually tables or stratified lists. For the output stage, INQUIRE has two capabilities which are particularly helpful. First, INQUIRE will automatically supply column and row titles, if they are not specified. This capability not only saves time in query development, but it also minimizes the likelihood that an output formatting problem will cause a job to fail. Second, output formats may often be specified so that manual analysis of retrieved data becomes a feasible way to obtain information which would otherwise be difficult or time-consuming to obtain directly.

This subsection has provided only a general description of INQUIRE's capabilities. Full appreciation of these capabilities can come only through use. Using the prewritten job streams (listed in Appendix A), the Depot Performance DBS allows programmers and analysts to use the system before they know how to write queries, thereby permitting them to exercise the system and learn its capabilities at the same time.

4.3.2 Advanced Capabilities

As is the case with any programming language, INQUIRE allows queries to be written at different levels of sophistication. While most applications of the Depot Performance DBS will not require highly complex queries, users should be aware that INQUIRE has capabilities beyond those described above. The purpose of this subsection is to introduce the reader to some of the more advanced capabilities and provide guidelines for their use. For further information on these topics, users should consult the INQUIRE User Language Tutorial.

INQUIRE has advanced capabilities in three areas: multi-data base retrieval, iterative retrieval, and macro programming. The multi-data base capability allows users to chain data bases together and perform retrievals on the "linked" records which result. This multi-data base capability can be very useful for "relational" information requests in which the retrieval criterion for any given record depends on field values in the other records in the data base. This capability has been used in one application and is discussed further in Appendix A (see the discussion of the DUPWRK2 query). The iterative retrieval capability allows users to create temporary data bases, and then subject those data bases to a "second" retrieval. This capability is discussed in Chapter IX of the User Language Tutorial, in the section on temporary data bases and the HOLD command. The macro programming capability allows users to write queries using parameter lists, interactive prompting, conditional execution, and branching in program flow. While parameter list macros have been used in the Depot Performance DBS, the other macro techniques have not. Users may wish to investigate these macro operations for future applications. Advanced macro programming is discussed in Chapter XI of the User Language Tutorial.

4.4 Query Formulation

For assistance in query formulation, users should refer to the INQUIRE User Language Tutorial. The tutorial covers the entire INQUIRE vocabulary along with all aspects of syntax and statement formation. Users may also refer to stored queries (see Appendix A) for examples of query construction.

Listed below are the more important INQUIRE commands used to formulate queries.

a. Retrieval Stage

FIND - permits the user to directly access information in the data base using keyed (indexed) field values.

SCAN - permits the user to sequentially read each record in the data base and select records for retrieval by testing field values.

b. Manipulation and Output Stages

DEFINE - permits the user to create temporary fields for retrieval and report generation.

COMPUTE - allows the user to compute values from retrieved data for reporting or selection.

SORT - enables the user to establish sort sequences by designating one or more fields as sort fields.

BREAK - permits the user to specify computing, totaling, and printing actions before or after a control break in a sorted sequence of logical records.

TOTAL - permits the user to compute cumulative totals for field values and tables at control breaks and at the end of a report, or give certain values such as averages, maxima, or minima.

TAB - enables the user to specify print positioning and formatting of retrieved, computed, or temporary data.

TITLE - allows a user to place a single-line or multi-line title over column-positioned data.

HEADER - enables the user to place a single-line or multi-line heading at the top of every page of a report.

4.5 Control Instructions

The control instructions which must accompany a query in an application job are the JCL statements. Line numbers 10-150 and 320 in Figure 3-1 are representative JCL statements for a query. All queries stored in the KEN data set include the required JCL statements for user convenience.

APPENDIX A

CURRENTLY AVAILABLE QUERIES IN THE SYSTEM

This Appendix defines 26 prewritten queries in the Depot Performance DBS. Of these, 12 are macros, while 14 are special application queries. Users may access all 26 queries in the KEN data set.

Macros

The Depot Performance DBS allows users to generate 12 different standard summary reports using macro instructions. To use a macro, users should call for the member name MACRUN, MACRUN1, or MACRUN2 in KEN and insert the desired macro instruction. The macro instruction consists of an ampersand (&), followed by the macro call word, and a parameter list (see Figure 3-4 in Section 3 of the Manual). Each of the 12 macro reports, and the associated macro call words, are listed below. The figure contains the specific macro query, while the header provides the actual title of the report.

1. Total program cost (funded/unfunded) by commodity group.
   MACRO: TOTLBDGT (Figure A-1)
   HEADER:
   FISCAL YEAR 19xx
   (SERVICE NAME)
   TOTAL DEPOT MAINTENANCE COST
   ($000)

2. Total program cost by program element (funded/unfunded within element) and commodity group.
   MACRO: PECBDGT (Figure A-2)
   HEADER:
   FISCAL YEAR 19xx
   (SERVICE NAME)
   COST BY PROGRAM ELEMENT AND COMMODITY
   ($000)

3. Total program cost by facility type (funded/unfunded within type) and commodity group.
   MACRO: ACTYCMDT (Figure A-3)
   HEADER:
   FISCAL YEAR 19xx
   (SERVICE NAME)
   COST BY FACILITY TYPE AND COMMODITY
   ($000)

4. Total program cost by facility (grouped by facility type) and commodity.
   MACRO: FACCMDT (Figure A-4)
   HEADER:
   FISCAL YEAR 19xx
   (SERVICE NAME)
   COST BY FACILITY AND COMMODITY
   ($000)

5. Total cost (by cost category) and total labor hours for each Type 1 activity. (A Type 1 activity is a government-owned, government-operated (GOGO) depot maintenance facility.)
MACRO: DEPOTCST (Figure A-5)
HEADER:
FISCAL YEAR 19xx
(SERVICE NAME)
COST BREAKDOWN BY GOGO DEPOT MAINTENANCE FACILITIES
($000)

6. Total cost (by cost category) for each Type 2 activity. (A Type 2 activity is a GOGO facility, but one which does not have depot maintenance as its primary mission.)
MACRO: NONDEPOT (Figure A-6)
HEADER:
FISCAL YEAR 19xx
(SERVICE NAME)
COST BREAKDOWN BY GOGO
NON-DEPOT MAINTENANCE FACILITIES
($000)

7. Total cost (by cost category) for each Type 3 activity. (A Type 3 activity is a contractor-owned, contractor-operated (COCO) facility.) Contractors are listed by identification number.
MACRO: CONTRCST (Figure A-7)
HEADER:
FISCAL YEAR 19xx
(SERVICE NAME)
COST BREAKDOWN BY COCO FACILITY
($000)

8. Total cost (by cost category) for each Type 4 activity. (A Type 4 activity is a GOGO depot maintenance facility owned by one Service, but which performs maintenance for another Service.)
MACRO: INTERSER (Figure A-8)
HEADER:
FISCAL YEAR 19xx
(SERVICE NAME)
COST BREAKDOWN BY GOGO OTHER
FACILITIES (INTERSERVICING)
($000)

9. Selected performance statistics for each Type 1 activity.
MACRO: STATISTI (Figure A-9)
HEADER:
FISCAL YEAR 19xx
(SERVICE NAME)
SELECTED FACILITY PERFORMANCE STATISTICS

10. Total cost by weapon system (grouped by commodity) and maintenance work performance category.
MACRO: SYSWPC (Figure A-10)
HEADER:
FISCAL YEAR 19xx
(SERVICE NAME)
TOTAL COST BY WEAPON SYSTEM AND
NON-MAINTENANCE SUPPORT WORK PERFORMANCE CATEGORIES
($000)

11. Total cost by weapon system (grouped by commodity) and maintenance support work performance category.
MACRO: SYSWPCMS (Figure A-11)
HEADER: (SERVICE NAME)
TOTAL COST BY WEAPON SYSTEM AND
MAINTENANCE SUPPORT WORK PERFORMANCE CATEGORIES
($000)

12. Total cost by facility and selected work performance categories for designated weapon systems.
MACRO: HISYS (Figure A-12)
HEADER: (SERVICE NAME)
TOTAL COST BY FACILITY
AND SELECTED WPC CATEGORIES
FOR DESIGNATED WEAPON SYSTEMS
($000)

Other Prewritten Queries

The 14 special application queries were developed to meet information requests not covered by the standard summary reports. The list below describes the reports these queries produce. To access the queries, users should call for the indicated member name in KEN. The figure contains the specific INQUIRE statements in the query, while the header provides the actual title of the report.

13. Directory of depot maintenance facilities for emergency action use (cross-references to the ALTFAC2 report below). The report shows for each weapon system (by type/model/series), the facilities which performed depot maintenance on that system and the associated cost and direct labor hours.
KEN Member Name: ALTFAC (Figure A-13)
HEADER: DEPOT MAINTENANCE FACILITY IDENTIFIER
BY TYPE/MODEL/SERIES
(BASED ON FY 1979 PERFORMANCE DATA)

14. Directory of depot maintenance facilities for emergency action use (cross-references to the ALTFAC report above). The report shows by facility and Service, the weapon systems supported and the associated cost and direct labor hours.
KEN Member Name: ALTFAC2 (Figure A-14)
HEADER: DEPOT MAINTENANCE FACILITY IDENTIFIER
BY FACILITY
BY TYPE/MODEL/SERIES
(BASED ON FY 1979 PERFORMANCE DATA)

15. Directory of depot maintenance facilities for emergency action use. This report is similar to that generated by ALTFAC2 except it shows which facilities supported specific components/parts, by Federal Supply Class.
KEN Member Name: QUEST79 (Figure A-15)
HEADER: DEPOT MAINTENANCE FACILITY IDENTIFIER
BY FACILITY
BY FEDERAL SUPPLY CLASS
(BASED ON FY 1979 PERFORMANCE DATA)

16. Aeronautical maintenance workloads at selected facilities by Service.
KEN Member Name: CHECK79 (Figure A-16)
HEADER:
WORKLOADS AT SELECTED FACILITIES
IN MAN-HOURS, BY SERVICE
AERONAUTICAL MAINTENANCE ONLY FOR ARMY & NAVY
ALL MAINTENANCE FOR AIR FORCE
FISCAL YEAR 1979

17. Depot maintenance costs for USAF weapon systems by commodity.
KEN Member Name: DAVEG (Figure A-17)
HEADER: (no header prepared)

18. Items receiving same work at more than one facility. (Note: this query is inefficient in that the output must be examined to obtain the final information. The following query retrieves the desired information directly.)
KEN Member Name: DUPWRK1 (Figure A-18)
HEADER:
AIR FORCE * * FY 1979
MULTIPLE FACILITY - SAME ITEM/SAME WORK
COST COMPARSIONS
(LARGE PRODUCTION QUANTITY OR LARGE EXPENSE)
(RETRIEVAL CRITERION: (PROD. QNTY.)*(TOTLCOST) GTE 50000)

19. Air Force items reworked at more than one facility. (Multi-data base query, see discussion at the end of this Appendix.)
KEN Member Name: DUPWRK2 (Figure A-19)
HEADER:
AIR FORCE * * FY 1979
MULTIPLE FACILITY - SAME ITEM/SAME WORK
COST COMPARISONS
(LARGE PRODUCTION QUANTITY OR LARGE EXPENSE)
(RETRIEVAL CRITERION: (PROD. QNTY.)*(TOTLCOST) GTE 50000)

20. Facilities which performed depot maintenance on items in Federal Supply Group 58.
KEN Member Name: ELEC (Figure A-20)
HEADER:
DEPOT MAINTENANCE ON FEDERAL SUPPLY GROUP 58
COMMUNICATION, DETECTION, AND COHERENT
RADIATION EQUIPMENT
BY FEDERAL SUPPLY CLASS
(BASED ON FY 1979 PERFORMANCE DATA)

21. Modification of macro (ACTYCMDT) showing total cost by facility type and commodity group for work performance categories A through N only.
KEN Member Name: QUERY (Figure A-21)
HEADER:
FISCAL YEAR 1979
ARMY
COST BY FACILITY TYPE AND COMMODITY
($000)
WORK PERFORMANCE CATEGORIES: A-N

22. Modification of macro (PECBDGT) showing direct Army costs by program element and commodity.
KEN Member Name: QUERY79 (Figure A-22)
HEADER:
FISCAL YEAR 1979
ARMY
DIRECT (7A) COSTS BY PROGRAM ELEMENT AND COMMODITY
($000)

23. Information on depot maintenance on the F-100 engine in FY 1979.
KEN Member Name: QUEST2 (Figure A-23)
HEADER:
DEPOT MAINTENANCE ON THE F-100
ENGINE IN FY 1979

24. Information to estimate the total number of tanks repaired at Anniston Army Depot in FY 79.
KEN Member Name: QUEST5 (Figure A-24)
HEADER:
(no header prepared)

25. Modification of macro (SYSWPC) showing, for combat vehicles, total cost by weapon system, work breakdown structure, and work performance categories A through N.
KEN Member Name: TAB8MOD (Figure A-25)
HEADER:
FISCAL YEAR 1979: ARMY
COMMODITY: COMBAT VEHICLES
TOTAL COST BY WEAPON YSTEM
AND
WORK BREAKDOWN STRUCTURE (WBS): COMPONENT LEVEL
(WORK PERFORMANCE CATEGORIES A THRU N ONLY)
($000)

26. Items whose average maintenance cost exceeded 100 percent of standard inventory price.
KEN Member Name: XCESS2 (Figure A-26)
HEADER:
(SERVICE NAME) ** FY 19xx
ITEMS MAINTAINED IN EXCESS OF 100% OF
STANDARD INVENTORY PRICE
BY FACILITY
(ZERO PRICE ITEMS EXCLUDED & TOTAL
EXCESS PER ITEM GREATER THAN $10K)

FIGURE A-1. TOTLBDGT

```
01000 FIND SERVICE=&PARM(1) AND (COMMODTY IS (A,B,C,D,E,F,G,H,K,L) SET ROW
02000 OF A), DEFINE A TABLE (FUNDED UNFUNDED TOTLCOST, SETB TOTAL, 9)
02100 B TEXT (FUNDED$ UNFUNDED$ TOTAL$)
03000  C TEXT (AIRCRAFT AUTOMOTIVE VEHICLES
04000 CONSTRUCTION COMMUNICATIONS/ELECTRONICS MISSILES SHIPS
05000 WEAPONS&&MUNITIONS GENERAL OTHER TOTAL), COMPUTE FUNDED FORMAT (K 13)
06000 (CLABRP + CLABRO + MLABRP + MLABRO + FMATL + FOTHER + FG&&A + FOVRHD +
07000 CONTRACT + FGFSERV + FMAINSPT) UNFUNDED FORMAT (K 13) (UMATLII + UMATLXC
08000  + UMATLMK + UMATLXP + UOTHER + UOVRHD + UG&&A + GFMII + GFMXC + GFMMK +
09000  GFMXP + UGFSERV + UMAINSPT), HEADER 'FISCAL YEAR &PARM(3)' '&PARM(2)'
10000 'TOTAL DEPOT MAINTENANCE COST' '($000)', TAB, TITLE B R/A,
11000 TOTAL C A 29 * (K 13).
END OF DATA
```

FIGURE A-2. PECBDGT

```
00010 FIND SERVICE=&PARM(1) AND (COMMODTY IS (A,B,C,D,E,F,G,H,K,L) SET COL
00020 OF A), DEFINE A TABLE (SETB TOTAL, FUNDED UNFUNDED TOTLCOST, 9)
00030 B TEXT (AIRCRAFT AUTO VEHICLES CONSTRUCT COM/ELEC MISSILES SHIPS
00040 WEAP&&MUN GENERAL OTHER TOTAL) C TEXT (FUNDED UNFUNDED TOTAL), COMPUTE
00050 FUNDED (CLABRP + CLABRO + MLABRP + MLABRO + FMATL + FOTHER +
00060 FOVRHD + FG&&A + CONTRACT + FGFSERV + FMAINSPT) UNFUNDED (UMATLII
00070 + UMATLXC + UMATLMK + UMATLXP + UOTHER + UOVRHD + UG&&A + GFMII +
00080 GFMXC + GFMMK + GFMXP + UGFSERV + UMAINSPT),
00085 HEADER 'FISCAL YEAR &PARM(3)' '&PARM(2)'
00090 'COST BY PROGRAM ELEMENT AND COMMODITY' '($000)', TAB,
00100 TITLE B R/A, BREAK AFTER PROGRAM SKIP 'PROGRAM ELEMENT '
00110 PROGRAM SKIP C TOTAL OF A 11 * (K 9).
END OF DATA
```

FIGURE A-3. ACTYCMDT

```
00010 FIND SERVICE=&PARM(1) AND (COMMODTY IS (A,B,C,D,E,F,G,H,K,L)
00020 SET COL OF A), DEFINE A TABLE (SETB TOTAL, FUNDED UNFUNDED
00030 TOTLCOST, 9) B TEXT (AIRCRAFT AUTO VEHICLES CONSTRUCT COM/ELEC
00040 MISSILES SHIPS WEAPON&&MUN GENERAL OTHER TOTAL) C TEXT (FUNDED
00050 UNFUNDED TOTAL), COMPUTE FUNDED (CLABRP + CLABRO + MLABRP +
00060 MLABRO + FMATL + FOTHER + FOVRHD + FG&&A + CONTRACT +
00070 FGFSERV + FMAINSPT) UNFUNDED (UMATLII + UMATLXC + UMATLMK +
00080 UMATLXP + UOTHER + UOVRHD + UG&&A + GFMII + GFMXC + GFMMK +
00090 GFMXP + UGFSERV + UMAINSPT), HEADER 'FISCAL YEAR &PARM(3)'
00100 '&PARM(2)' 'COST BY FACILITY TYPE AND COMMODITY' '($000)',
00110 TAB, TITLE B R/A, BREAK AFTER OMNROPER SKIP 'FACILITY TYPE '
00120 OMNROPER SKIP C TOTAL OF A 11 * (K 9).
END OF DATA
```

FIGURE A-4. FACCMDT

```
00010 FIND SERVICE=&PARM(1) AND (COMMODTY IS (A,B,C,D,E,F,G,H,K,L)
00020 SET COL OF A), DEFINE A TABLE (SETB TOTAL, TOTLCOST, 9) B TEXT
00030 (AIRCRAFT AUTO VEHICLES CONSTRUCT COM/ELEC MISSILES SHIPS
00040 WEAP&&MUN GENERAL OTHER TOTAL), HEADER 'FISCAL YEAR &PARM(3)'
00050 '&PARM(2)' 'COST BY FACILITY AND COMMODITY' '($000)', TITLE
00060 B R/A, TAB, BREAK BEFORE OWNROPER SKIP 'FACILITY TYPE '
00070 OWNROPER SKIP AFTER FACILITY FACILITY TOTAL OF A 17 * (K 8)
00080 AFTER OWNROPER 'TOTAL' TOTAL OF A 17 * (K 8).
END OF DATA
```

FIGURE A-5. DEPOTCST

```
00010 FIND SERVICE=&PARM(1) AND (OWNROPER IS (1) SET ROW OF A),
00020 DEFINE A TABLE (LABRHRS LABRCOST MATL OTHRDRCT MAINTSPT OVRHD G&&A
00030 TOTLCOST, SETB, 9) B TEXT (LABRHRS LABRCOST MATL OTHRDRCT
00040 MAINTSPT OVRHD G&&A TOTLCOST), COMPUTE LABRHRS (CLABRPHR + CLABROHR
00050 + MLABRPHR + MLABROHR) LABRCOST (CLABRP + CLABRO + MLABRP + MLABRO)
00060 MATL (FMATL + UMATLII + UMATLXC + UMATLMK + UMATLXP) MAINTSPT
00070 (FMAINSPT + UMAINSPT) OTHRDRCT (FOTHER + UOTHER) OVRHD (FOVRHD + UOVRHD)
00080 G&&A (FG&&A + UG&&A), HEADER 'FISCAL YEAR &PARM(3)' '&PARM(2)'
00090 'COST BREAKDOWN BY GOGO DEPOT MAINTENANCE FACILITIES'
00100 '($000)', TAB, TITLE B R/A, BREAK AFTER FACILITY
00110 SKIP FACILITY TOTAL OF A 17 (K 9), TOTAL 'TOTAL' A.
END OF DATA
```

FIGURE A-6. NONDEPOT

```
00010 FIND SERVICE=&PARM(1) AND (OWNROPER IS (2) SET ROW OF A),
00020 DEFINE A TABLE (CONTRACT GFMATL GFSERV MAINTSPT TOTLCOST,
00030 SETB) B TEXT (CONTRACT GFMATL GFSERV MAINTSPT TOTAL),
00040 COMPUTE GFMATL (GFMII + GFMXC + GFMMK + GFMXP) GFSERV
00050 (FGFSERV + UGFSERV) MAINTSPT (FMAINSPT + UMAINSPT),
00060 HEADER 'FISCAL YEAR &PARM(3)' '&PARM(2)'
00070 'COST BREAKDOWN' 'BY' 'GOGO NON-DEPOT MAINTENANCE FACILITIES'
00075 '($000)',
00080 TAB, TITLE B R/A, BREAK AFTER FACILITY SKIP FACILITY TOTAL
00090 OF A 17 (K 9), TOTAL 'TOTAL' A.
END OF DATA
```

FIGURE A-7. CONTRCST

```
00010 FIND SERVICE=&PARM(1) AND (OWNROPER IS (3) SET ROW OF A),
00020 DEFINE A TABLE (CONTRACT GFMATL GFSERV MAINTSPT TOTLCOST,
00030 SETB) B TEXT (CONTRACT GFMATL GFSERV MAINTSPT TOTAL),
00040 COMPUTE GFMATL (GFMII + GFMXC + GFMMK + GFMXP) GFSERV
00050 (FGFSERV + UGFSERV) MAINTSPT (FMAINSPT + UMAINSPT),
00060 HEADER 'FISCAL YEAR &PARM(3)' '&PARM(2)'
00070 'COST BREAKDOWN BY COCO FACILITIES' '($000)',
00080 TAB, TITLE B R/A, BREAK AFTER FACILITY SKIP FACILITY TOTAL
00090 OF A 17 (K 9), TOTAL 'TOTAL' A.
END OF DATA
```

FIGURE A-8. INTERSER

```
00010 FIND SERVICE=&PARM(1) AND (OWNROPER IS (4) SET ROW OF A),
00020 DEFINE A TABLE (CONTRACT GFMATL GFSERV MAINTSPT TOTLCOST, SETB)
00030 B TEXT (CONTRACT GFMATL GFSERV MAINTSPT TOTAL), COMPUTE GFMATL
00040 (GFMII + GFMXC + GFMMK + GFMXP) GFSERV (FGFSERV + UGFSERV)
00050 MAINTSPT (FMAINSPT + UMAINSPT), HEADER 'FISCAL YEAR &PARM(3)'
00060 '&PARM(2)' 'COST BREAKDOWN BY GOGO OTHER FACILITIES (INTERSERVICING)'
00070 '($000)', TAB, TITLE B R/A, BREAK AFTER FACILITY SKIP
00080 FACILITY TOTAL OF A 17 (K 9), TOTAL 'TOTAL' A.
END OF DATA
```

FIGURE A-9. STATISTI

```
00010 FIND SERVICE=&PARM(1) AND OWNROPER IS 1, COMPUTE
00020 SCIVLABR (CLABRP + CLABRO) SLABR (SCIVLABR + MLABRP + MLABRO)
00030 SCIVHRS (CLABRPHR + CLABROHR) SLABRHRS (SCIVHRS + MLABRPHR + MLABROHR)
00040 SFUNDED (SLABR + FMATL + FOTHER + FOVRHD + FG&&A
00050  + FMAINSPT) SOVRHD (FOVRHD + UOVRHD) SINDRCT (SOVRHD +
00060 FG&&A + UG&&A) SMATL (FMATL + UMATLII + UMATLXC + UMATLMK
00070 + UMATLXP), HEADER 'FISCAL YEAR &PARM(3)' '&PARM(2)'
00080 'SELECTED FACILITY PERFORMANCE STATISTICS',
00082 TITLE (OVERHEAD COST PER LABOR HOUR)
00083 OVHD/HRS (LABOR TO INDIRECT RATIO) LAB/INDR (LABOR TO MATERIAL RATIO)
00084 LAB/MATL (MATERIAL COST PER LABOR HOUR) MATL/HRS
00085 (CIVILIAN LABOR COST PER HOUR) CIVRATE (TOTAL COST) TOTLCST
00086 (PERCENT FUNDED) %FUNDED (LABOR TO OVERHEAD RATIO) LAB/OVHD,
00090  BREAK AFTER FACILITY COMPUTE TOTLCST (TOTAL
00100 OF TOTLCOST)  FUNDED (TOTAL OF SFUNDED)  %FUNDED FORMAT (PCT2)
00110 (FUNDED / TOTLCST)  LABR (TOTAL OF SLABR)  OVRHD (TOTAL OF
00120 SOVRHD)  LAB/OVHD FORMAT (D2) (LABR / OVRHD)  LABRHR (TOTAL OF
00130 SLABRHRS)  OVHD/HRS FORMAT (D2) (OVRHD / LABRHR)  INDRCT (TOTAL OF
00140 SINDRCT)  LAB/INDR FORMAT (D2) (LABR / INDRCT)  MATL (TOTAL OF SMATL)
00150 CIVLABR (TOTAL OF SCIVLABR)  CIVHRS (TOTAL OF SCIVHRS)
00160 LAB/MATL FORMAT (D2) (LABR / MATL)  MATL/HRS FORMAT (D2) (MATL / LABRHR)
00170 CIVRATE FORMAT (D2) (CIVLABR / CIVHRS)  TAB FACILITY TOTLCST 17 + ($K 8)
00180  %FUNDED (PCT2 8) LAB/OVHD (D2 8) OVHD/HRS ($D2 8)
00190 LAB/INDR (D2 8)
00200 LAB/MATL (D2 8) MATL/HRS ($D2 8) CIVRATE ($D2 8).
END OF DATA
```

FIGURE A-10. SYSWPC

```
00010 FIND SERVICE=&PARM(1) AND (WPC IS (A,B,C,D,E,F,G,H,I,J,K,L,M,N) SET COL
00020  OF A), DEFINE A TABLE (SETB, TOTLCOST) B TEXT (OVRHAUL PROGMNT
00030 CONVER ACTIV INACTIV RENOVAT REWORK MOD REPAIR TEST
00040 MFG RECLAM STORAGE TECHAID), HEADER 'FISCAL YEAR &PARM(3)' '&PARM(2)'
00050 'TOTAL COST BY WEAPON SYSTEM' 'AND'
00060 'NON-MAINTENANCE SUPPORT WORK PERFORMANCE CATEGORIES'
00070 '($000)', TAB, TITLE B R/A, BREAK BEFORE COMMODTY
00080 SKIP 2 '*** COMMODITY ' COMMODTY ' ***' SKIP 2 AFTER SYSTEM SYSTEM TOTAL
00090  OF A 7 * (K 7).
END OF DATA
```

FIGURE A-11. SYSWPCMS

```
00010 FIND SERVICE=&PARM(1) AND (WPC IS (P,Q,R,S,T) SET COL OF A),
00020 DEFINE A TABLE (SETB, TOTLCOST) B TEXT
00021 (PROG/PLANSPT MNT/TECHSPT TECH/ENGDATA TECH/ADMINTRNG
00022 NON-MNT), HEADER '&PARM(2)'
00030 'TOTAL COST BY WEAPON SYSTEM' 'AND'
00040 'MAINTENANCE SUPPORT WORK PERFORMANCE CATEGORIES' '(IN THOUSANDS OF $)',
00050  TAB, TITLE B R/A,
00080  BREAK BEFORE COMMODTY SKIP 2 '*** COMMODITY '
00090 COMMODTY ' ***' SKIP 2 AFTER SYSTEM SYSTEM TOTAL OF A 7 * (K 20).
END OF DATA
```

FIGURE A-12. HISYS

```
00010 FIND SERVICE=&PARM(1)
00020 AND (COMMODTY=&PARM(2) AND SYSTEM=&PARM(3)) OR (COMMODTY=&PARM(4)
00030 AND SYSTEM=&PARM(5)) OR (COMMODTY=&PARM(6) AND SYSTEM=&PARM(7))
00040 OR (COMMODTY=&PARM(8) AND SYSTEM=&PARM(9)) OR (COMMODTY=&PARM(10)
00050 AND SYSTEM=&PARM(11)) OR (COMMODTY=&PARM(12) AND SYSTEM=&PARM(13))
00060 OR (COMMODTY=&PARM(14) AND SYSTEM=&PARM(15)) AND
00090 (WPC IS (A,C,H,I,J,K) SET COL OF A), DEFINE A TABLE (SETB, TOTLCOST)
00100 B TEXT (OVERHAUL CONVER MOD REPAIR TEST MFG),
00105 HEADER 'FISCAL YEAR &PARM(17)' '&PARM(16)'
00110 'TOTAL COST' 'BY' 'FACILITY AND SELECTED WPCS' 'FOR'
00120 'DESIGNATED WEAPON SYSTEMS' '($000)', TAB, TITLE
00125 (COMMODITY) R/COMMODTY (SYSTEM) SYSTEM (FACILITY) R/FACILITY
00130 B R/A, BREAK BEFORE COMMODTY SKIP COMMODTY 9 SKIP BEFORE SYSTEM
00140 SYSTEM 16 AFTER FACILITY FACILITY 22 TOTAL OF A 39 * (K 9).
END OF DATA
```

FIGURE A-13. ALTFAC

```
00190 SCAN FSC1 CONTAINS
00191 (A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z) OR
00192 FSC2 CONTAINS
00193 (A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z) OR
00194 FSC3 CONTAINS
00195 (A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z) OR
00196 FSC4 CONTAINS
00197 (A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z),
00230 DEFINE FSC1 ITEMNUMB (SUBFIELD 1 1) FSC2 ITEMNUMB (SUBFIELD 2 1)
00240        FSC3 ITEMNUMB (SUBFIELD 3 1) FSC4 ITEMNUMB (SUBFIELD 4 1),
00260  COMPUTE HRS (CLABRPHR + CLABROHR + MLABRPHR + MLABROHR),
00270 BREAK BEFORE ITEMNUMB TAB ITEMNUMB 1 BEFORE SERVICE TAB SERVICE 30
00280 AFTER FACILITY COMPUTE TOTCST (TOTAL OF TOTLCOST)
00290 TOTHRS (TOTAL OF HRS)  TAB FACILITY 48
00300 TOTCST 68 TOTHRS 88,
00305 TITLE
00310  (TYPE/ MODEL/ SERIES) ITEMNUMB
00320 (SERVICE A=ARMY*N=NAVY F=AIRFORCE*M=MARINES) SERVICE
00330 (FACILITY NAME) FACILITY (TOTAL MAINTENANCE) R/TOTCST
00340 (TOTAL LABOR HOURS) R/TOTHRS,
00350 HEADER 'DEPOT MAINTENANCE FACILITY IDENTIFIER'
00360 'BY TYPE/MODEL/SERIES' '(BASED ON FY 1979 PERFORMANCE DATA)' ' '.
```

A-14. ALTFAC2

```
00190 SCAN FSC1 CONTAINS
00200 (A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z) OR
00210 FSC2 CONTAINS
00220 (A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z) OR
00230 FSC3 CONTAINS
00240 (A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z) OR
00250 FSC4 CONTAINS
C0260 (A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z),
00270 DEFINE FSC1 ITEMNUMB (SUBFIELD 1 1) FSC2 ITEMNUMB (SUBFIELD 2 1)
00280        FSC3 ITEMNUMB (SUBFIELD 3 1) FSC4 ITEMNUMB (SUBFIELD 4 1),
00290  COMPUTE HRS (CLABRPHR + CLABROHR + MLABRPHR + MLABROHR),
00300 BREAK BEFORE SERVICE TAB SERVICE 11 BEFORE FACILITY
00310 TAB SERVICE 11 FACILITY 30
00320 AFTER ITEMNUMB COMPUTE TOTCST (TOTAL OF TOTLCOST)
00330 TOTHRS (TOTAL OF HRS)  TAB ITEMNUMB 55
00340 TOTCST 75 TOTHRS 95,
00350  TITLE
00360   (TYPE/ MODEL/ SERIES) ITEMNUMB
00370 (SERVICE A=ARMY*N=NAVY F=AIRFORCE*M=MARINES) SERVICE
00380 (FACILITY NAME) FACILITY (TOTAL MAINTENANCE) R/TOTCST
00390 (TOTAL LABOR HOURS) R/TOTHRS,
00400 HEADER 'DEPOT MAINTENANCE FACILITY IDENTIFIER'
00410 'BY FACILITY' 'BY TYPE/MODEL/SERIES'
00420 '(BASED ON FY 1979 PERFORMANCE DATA)' ' '.
```

FIGURE A-15. QUEST79

```
00190 SCAN FSC1 CONTAINS (0,1,2,3,4,5,6,7,8,9) AND
00200      FSC2 CONTAINS (0,1,2,3,4,5,6,7,8,9) AND
00210      FSC3 CONTAINS (0,1,2,3,4,5,6,7,8,9) AND
00220      FSC4 CONTAINS (0,1,2,3,4,5,6,7,8,9),
00230 DEFINE FSC1 ITEMNUMB (SUBFIELD 1 1) FSC2 ITEMNUMB (SUBFIELD 2 1)
00240        FSC3 ITEMNUMB (SUBFIELD 3 1) FSC4 ITEMNUMB (SUBFIELD 4 1)
00250        FSC ITEMNUMB (SUBFIELD 1 4),
00260  COMPUTE HRS (CLABRPHR + CLABROHR + MLABRPHR + MLABROHR),
00270 BREAK BEFORE SERVICE TAB SERVICE 11 BEFORE FACILITY TAB SERVICE 11
00280 FACILITY 30 AFTER FSC COMPUTE TOTCST (TOTAL OF TOTLCOST)
00290 TOTHRS (TOTAL OF HRS)  TAB FSC 55
00300 TOTCST 75 TOTHRS 95,
00305 TITLE
00310  (FEDERAL SUPPLY CLASS) FSC
00320 (SERVICE A=ARMY*N=NAVY F=AIRFORCE*M=MARINES) SERVICE
00330 (FACILITY NAME) FACILITY (TOTAL MAINTENANCE) R/TOTCST
00340 (TOTAL LABOR HOURS) R/TOTHRS,
00350 HEADER 'DEPOT MAINTENANCE FACILITY IDENTIFIER'
00360 'BY FACILITY'
00370 'BY FEDERAL SUPPLY CLASS' '(BASED ON FY 1979 PERFORMANCE DATA)' ' '.
```

FIGURE A-16. CHECK79

```
00190 SCAN (SERVICE EQ A AND COMMODTY EQ A AND FACILITY EQ
00200      (ARADMAC, 'NEW CUMBERLAND', SACRAMENTO, 'RED RIVER',
00205       TOBYHANNA)) OR (SERVICE EQ F AND FACILITY EQ
00210      (NEWARK, OGDEN, 'OKLAHOMA CITY', SACRAMENTO, 'SAN ANTONIO',
00220       'WARNER ROBINS')) OR (SERVICE EQ N AND FACILITY IS NARF
00230       AND COMMODTY EQ A AND LABRHRS NE 0),
00270 COMPUTE LABRHRS (CLABRPHR + CLABROHR + MLABRPHR + MLABROHR)
00280         PRODHRS (CLABRPHR + MLABRPHR)
00290         CIVLHRS (CLABRPHR + CLABROHR)
00300         MILTHRS (MLABRPHR + MLABROHR),
00310 BREAK BEFORE SERVICE '***** FACILITIES OPERATED BY ' SERVICE *
00320       BEFORE FACILITY SKIP 2 '*** WORKLOAD AT ' FACILITY *
00330   AFTER FACILITY SKIP 'TOTAL LABOR HOURS' TOTAL OF LABRHRS 42
00340    SKIP 'TOTAL PRODUCTION HOURS' TOTAL OF PRODHRS 42
00350    SKIP 'TOTAL CIVILIAN HOURS' TOTAL OF CIVLHRS 42
00360    SKIP 'TOTAL MILITARY HOURS' TOTAL OF MILTHRS 42 EJECT 13
00370   AFTER SERVICE SKIP 2 'TOTAL LABOR HOURS FOR SERVICE.....'
00380    TOTAL OF LABRHRS 42 SKIP 9,
00390 HEADER 'WORKLOADS AT SELECTED FACILITIES' 'IN MAN HOURS, BY SERVICE'
00400    'AERONAUTICAL MAINTENANCE ONLY FOR ARMY AND NAVY'
00410    'ALL MAINTENANCE FOR AIR FORCE' 'FISCAL YEAR 1979'.
```

FIGURE A-17. DAVEG

```
00190 FIND SERVICE=F,
00200 BREAK BEFORE COMMODTY COMMODTY AFTER SYSTEM
00210 COMPUTE TOTL (TOTAL OF TOTLCOST)  TAB SYSTEM TOTL
00220 AFTER COMMODTY  TAB 'TOTAL COST OF WPN SYSTEMS IN COMMODITY'
00230  COMMODTY * TOTAL OF TOTLCOST,
00240 TOTAL 'TOTAL COST OF ALL USAF WPN SYS & ENDITEMS IN FY79' TOTLCOST.
```

FIGURE A-18. DUPWRK1

```
00190 FIND SERVICE=F AND CRIT GE 50000,
00200 COMPUTE CRIT (PRODQNTY * TOTLCOST),
00210 HEADER 'AIR FORCE**FY 1979' 'MULTIPLE FACILITY - SAME ITEM/SAME WORK'
00220  'COST COMPARISONS' '(LARGE PRODUCTION QUANTITY OR LARGE EXPENSE)'
00230 '(RETRIEVAL CRITERION:  (PROD. QNTY.) * (TOTLCOST) GTE 50000)'
00240 ' ',
00250 BREAK BEFORE ITEMNUMB ITEMNAME ITEMNUMB WBS SYSTEM
00260  BEFORE WPC TAB WPC 55 11
00270  AFTER FACILITY COMPUTE TOT (TOTAL OF TOTLCOST)
00280  PQ (TOTAL OF PRODQNTY)
00290 AVG (TOT / PQ) TOTA (AVG * PQ)
00300 TAB FACILITY 57 PQ * 13 AVG * 15 TOTA,
00310 TITLE (ITEM NAME) ITEMNAME (ITEM NUMBER) ITEMNUMB (WBS) WBS
00320 (WPN SYSTEM) SYSTEM
00330  (WORK PERFORMANCE CATEGORY) WPC (FACILITY) FACILITY
00340 (PRODUCTION QUANTITY) PQ (AVERAGE MAINTENANCE COST) AVG
00350  (TOTAL COST) R/TOTA.
```

FIGURE A-19. DUPWRK2

```
00180 OPEN FILE * AS DB1, FILE * AS DB2,
00190 CONNECT DB1 TO DB2 BY ITEMNUMB.
00200 FIND IN DB1 SERVICE=A AND
00210      IN DB2 SERVICE=A AND
00220      FACILITY IN DB1 NE FACILITY IN DB2 AND
00230      WBS IN DB1 EQ WBS IN DB2 AND CRIT1 GE 50000 AND
00240      WPC IN DB1 EQ WPC IN DB2 AND SYSTEM IN DB1 EQ SYSTEM IN DB2,
00250 COMPUTE  CRIT1 (PRODQNTY IN DB1 *  TOTLCOST IN DB1),
00260 HEADER 'ARMY**FY 1979' 'MULTIPLE FACILITY - SAME ITEM/SAME WORK'
00270     'COST COMPARISONS' '(LARGE PRODUCTION QUANTITY OR LARGE EXPENSE)'
00280     '(RETRIEVAL CRITERION:  (PROD. QNTY.) * (TOTLCOST) GTE 50000)'
00290     ' ',
00300 BREAK BEFORE ITEMNUMB ITEMNAME ITEMNUMB WBS SYSTEM
00310       BEFORE WPC WPC 55 11
00320       AFTER FACILITY IN DB1
00330       AFTER ITEMNO IN DB1
00340           COMPUTE AVG (TOTLCOST IN DB1 / PRODQNTY IN DB1)
00350                   TOTA (AVG * PRODQNTY IN DB1)
00360           TAB FACILITY 60 PRODQNTY 86 13 AVG * 15 TOTA,
00370 TITLE (ITEM NAME) ITEMNAME (ITEM NUMBER) ITEMNUMB (WBS) WBS
00380       (WEAPON SYSTEM) SYSTEM
00390       (WORK PERFORMANCE CATEGORY) WPC (FACILITY) FACILITY
00400       (PRODUCTION QUANTITY) PRODQNTY (AVERAGE MAINTENANCE COST) AVG
00410       (TOTAL COST) R/TOTA.
```

FIGURE A-20. ELEC

```
00190  SCAN FSG CONTAINS 58,
00200  DEFINE FSG ITEMNUMB (SUBFIELD 1 2) FSC ITEMNUMB (SUBFIELD 1 4),
00210 COMPUTE DLH (CLABRPHR + CLABROHR + MLABRPHR + MLABROHR)
00220 DLD (CLABRP + CLABRO + MLABRP + MLABRO)
00230 MOD (FMATL + UMATLII + UMATLIC + UMATLMK + UMATLXP +
00240 FOTHER + UOTHER)
00250 IGA (FOVRHD + UOVRHD + FG&A + UG&A)
00255 CNT (CONTRACT + GFMII + GFMIC + GFMMK + GFMXP + FGFSERV + UGFSERV),
00260  BREAK BEFORE FSC TAB '***FEDERAL SUPPLY CLASS  ' '*** ' FSC ' ***'
00270  SKIP 3 AFTER FSC SKIP 5 BEFORE ITEMNUMB
00280 BEFORE FACILITY AFTER WPC COMPUTE
00290 TDLH (TOTAL OF DLH) TDLD (TOTAL OF DLD) TMOD (TOTAL OF MOD)
00300 TIGA (TOTAL OF IGA) TCNT (TOTAL OF CNT)
00310 TOT (TDLD + TMOD + TIGA + TCNT)
00320 QNTY (TOTAL OF PRODQNTY)
00330 MCU ROUND (TOT / QNTY) TAB ITEMNUMB ITEMNAME 16
00340  SERVICE 38 FACILITY 41 WPC 58 QNTY * 8 TDLH * 8 TDLD * 8
00350 TMOD * 8 TIGA * 8 TOT * 17 MCU * 8,
00360 TITLE (TOTAL *INCL/GFM ON CONTRACT WORK*) R/TOT
00370  (ITEM ID NO) L/ITEMNUMB (ITEM NAME) L/ITEMNAME
00380 (S V C) R/SERVICE (FACILITY NAME/CODE) L/FACILITY
00390 (WORK PERF CAT) R/WPC (QUAN COMP) R/QNTY (DIR LAB HRS) R/TDLH
00400 (DIR LAB $) R/TDLD (MAT & OTHR DIR) R/TMOD (IND & G&A) R/TIGA
00410 (MAINT C$T/UNIT) R/MCU,
00420  HEADER 'DEPOT MAINTENANCE ON FEDERAL SUPPLY GROUP 58'
00430  'COMMUNICATION, DETECTION, AND COHERENT RADIATION EQUIPMENT'
00440 'BY FEDERAL SUPPLY CLASS' '(BASED ON FY 1979 PERFORMANCE DATA)' ' '.
```

FIGURE A-21. QUERY

```
00190 FIND SERVICE=A AND WP CONTAINS (A,B,C,D,E,F,G,H,I,J,K,L,M,N)
00191 AND (COMMODTY IS (A,B,C,D,E,F,G,H,K,L) SET COL OF A),
00192 DEFINE WP WPC (SUBFIELD 1 1)
00200  A TABLE (SETB TOTAL, FUNDED UNFUNDED
00210 TOTLCOST, 9) B TEXT (AIRCRAFT AUTO VEHICLES CONSTRUCT COM/ELEC
00220 MISSILES SHIPS WEAPON&MUN GENERAL OTHER TOTAL) C TEXT (FUNDED
00230 UNFUNDED TOTAL), COMPUTE FUNDED (CLABRP + CLABRO + MLABRP +
00240 MLABRO + FMATL + FOTHER + FOVRHD + FG&A + CONTRACT +
00250 FGFSERV + FMAINSPT) UNFUNDED (UMATLII + UMATLXC + UMATLMK +
00260 UMATLXP + UOTHER + UOVRHD + UG&A + GFMII + GFMXC + GFMMK +
00270 GFMXP + UGFSERV + UMAINSPT), HEADER 'FISCAL YEAR 1979'
00280 'ARMY' 'COST BY FACILITY TYPE AND COMMODITY' '($000)'
00285 'WORK PERFORMANCE CATEGORIES:  A - N',
00290 TAB, TITLE B R/A, BREAK AFTER OWNROPER SKIP 'FACILITY TYPE '
00300 OWNROPER SKIP C TOTAL OF A 11 * (K 9).
```

FIGURE A-22. QUERY79

```
00190 FIND SERVICE=A AND CUSTOMER CONTAINS 7A AND (COMMODTY IS
00200 (A,B,C,D,E,F,G,H,K,L) SET COL OF A),
00210  DEFINE A TABLE (SETB TOTAL, FUNDED UNFUNDED TOTLCOST, 9)
00220 B TEXT (AIRCRAFT AUTO VEHICLES CONSTRUCT COM/ELEC MISSILES SHIPS
00230 WEAP&MUN GENERAL OTHER TOTAL) C TEXT (FUNDED UNFUNDED TOTAL), COMPUTE
00240 FUNDED (CLABRP + CLABRO + MLABRP + MLABRO + FMATL + FOTHER +
00250 FOVRHD + FG&A + CONTRACT + FGFSERV + FMAINSPT) UNFUNDED (UMATLII
00260 + UMATLXC + UMATLMK + UMATLXP + UOTHER + UOVRHD + UG&A + GFMII +
00270 GFMXC + GFMMK + GFMXP + UGFSERV + UMAINSPT),
00280 HEADER 'FISCAL YEAR 1979' 'ARMY'
00290 'DIRECT (7A) COSTS BY PROGRAM ELEMENT AND COMMODITY' '($000)', TAB,
00300 TITLE B R/A, BREAK AFTER PROGRAM SKIP 'PROGRAM ELEMENT '
00310 PROGRAM SKIP C TOTAL OF A 11 * (K 9).
```

FIGURE A-23. QUEST2

```
00200 FIND ITEMNUMB=000F0100 OR ITEMNUMB=000F0100D OR ITEMNUMB=000F0100F
00210 OR ITEMNUMB=000F0100023A OR ITEMNUMB=000F0100023B
00220 OR ITEMNUMB=000F0100023C OR ITEMNUMB=000F0100023F
00230 OR ITEMNUMB=000F0100023G OR ITEMNUMB=000F0100023H OR
00231 ITEMNUMB=000F0100100,
00240 TAB ITEMNUMB ITEMNAME PRICE SYSTEM WBS WPC
00250  FACILITY PRODQNTY TOTLCOST WORKDAYS,
00260 BREAK BEFORE WPC 'IN WORK PERFORMANCE CATEGORY:  ' WPC SKIP 2,
00270 HEADER 'DEPOT MAINTENANCE ON THE F-100 ENGINE IN FY 1979' ' ',
```

FIGURE A-24. QUEST5

```
00190 FIND SERVICE=A AND FACILITY=ANNISTON AND COMMODTY=C AND WPC=A*
00200 AND CATEGORY EQ 1 AND COMPONET EQ 1 AND SYSTEM EQ
00210 (AAK,AAM,AB,AC,AD,AG,AH,AI,AJ,AK,AL,AN,AO,AP,AS,AT,AW,AX,AY,
00220 GB,LA,LB,LC),
00230 TAB ITEMNAME ITEMNUMB PRODQNTY PRICE QNTREPYR QNTPREYR QNTOTHYR,
00240 BREAK BEFORE SYSTEM TAB '*** WPN SYSTEM:  ' SYSTEM SKIP 2
00250 AFTER SYSTEM COMPUTE PQ (TOTAL OF PRODQNTY) QFY (TOTAL OF QNTREPYR)
00260 QPFY (TOTAL OF QNTPREYR) QAOFY (TOTAL OF QNTOTHYR)
00270 TAB 'FOR WPN SYSTEM***** ' SYSTEM ' AT ANNISTON IN FY 1979:' /
00280 'TOTAL PRODUCTION QUANTITY ' PQ /
00290 'TOTAL PROD QNTY INDUCTED IN FY 79 ' QFY /
00300 'TOTAL PROD QNTY INDUCTED IN FY 78 ' QPFY /
00310 'TOTAL PROD QNTY INDUCTED IN YRS PRIOR TO FY 78 ' QAOFY SKIP 5,
00330 TOTAL 'TOTAL TANKS PRODUCED AT ANNISTON IN FISCAL YEAR 1979' PRODQNTY.
```

FIGURE A-25. TAB8MOD

```
00190 FIND SERVICE=A AND COMMODTY=C AND WPC LE N
00200 AND (COMPONET IS (1,2,3,4,5,6,7) SET COL OF Z),
00210 DEFINE Z TABLE (SETB TOTAL,TOTLCOST) B TEXT (FRAME ENGINE
00220 ACC&COMP ELEC&COM ARMAMENT SPT&EQT OTHER TOTAL),
00230 HEADER 'FISCAL YEAR 1979:  ARMY'
00240 'COMMODITY:  COMBAT VEHICLES'
00250 'TOTAL COST BY WEAPON SYSTEM' 'AND'
00260 'WORK BREAKDOWN STRUCTURE (WBS):  COMPONENT LEVEL'
00270 '(WORK PERFORMANCE CATEGORIES A THRU N ONLY)'
00280 '($000)', TAB, TITLE B R/Z, BREAK BEFORE COMMODTY
00290 SKIP 2 'WPN SYS CODE' SKIP 2
00300 AFTER SYSTEM TAB SYSTEM 5 TOTAL
00310  OF Z 10 * (K 10).
```

FIGURE A-26. XCESS2

```
00190 FIND SERVICE=A AND AVG GT PRICE AND DIFFP GE 10000 AND PRICE NE 0,
00200  COMPUTE AVG (TOTLCOST / PRODQNTY)
00210  DIFFP ((AVG - PRICE) * PRODQNTY),
00220 HEADER 'ARMY ** FY 1979' 'ITEMS MAINTAINED IN EXCESS OF 100% OF '
00230 'STANDARD INVENTORY PRICE'  'BY FACILITY'
00240 '(ZERO PRICE ITEMS EXCLUDED & TOTAL EXCESS PER ITEM GREATER THAN $10K)'
00241 ' ',
00250 TAB ITEMNAME ITEMNUMB 23 DIFFP PRICE AVG PRODQNTY WPC 105 WORKDAYS 111
00260 SYSTEM 124,
00270 TITLE
00272 (ITEM NAME) ITEMNAME (TOTAL ITEM EXCESS) R/DIFFP
00273 (STD INV PRICE) R/PRICE
00274 (ITEM ID NO.) ITEMNUMB
00290 (AVG MAINT COST) R/AVG (PRODUCTION QUANTITY) 88
00300 (WORK ACC CODE) WPC (AVERAGE WORKDAYS) 113
00310 (WPN SYS CODE) SYSTEM,
00320  BREAK BEFORE FACILITY EJECT '*** ' FACILITY ' ***' SKIP 2
00330  ON DIFFP (D) AFTER FACILITY COMPUTE TOTLEXES (TOTAL OF DIFFP)
00340  TAB SKIP 2 'TOTAL EXCESS $ ON DLM AT ' FACILITY TOTLEXES,
00350  TOTAL COMPUTE  OTOT (TOTAL OF DIFFP) TAB
00360  'TOTAL BIG TICKET EXCESS DOLLARS SPENT ON DLM IN FY 1979' OTOT.
```

The Multi-Data Base Query DUPWRK2

The objective of the DUPWRK2 query was to identify all Air Force items, by Federal Stock Number, which received the same type of depot maintenance at two or more facilities. Every job order record contains an item identification number field, a work performance category (WPC) field, and a facility field (containing the name of the facility where the item was repaired). A query was needed which would retrieve a job order record from the data base if, and only if, there existed at least one other record in the data base with the same values in the item ID number and WPC fields, but a different value in the facility field. This retrieval was accomplished using INQUIRE's multi-data base capability.

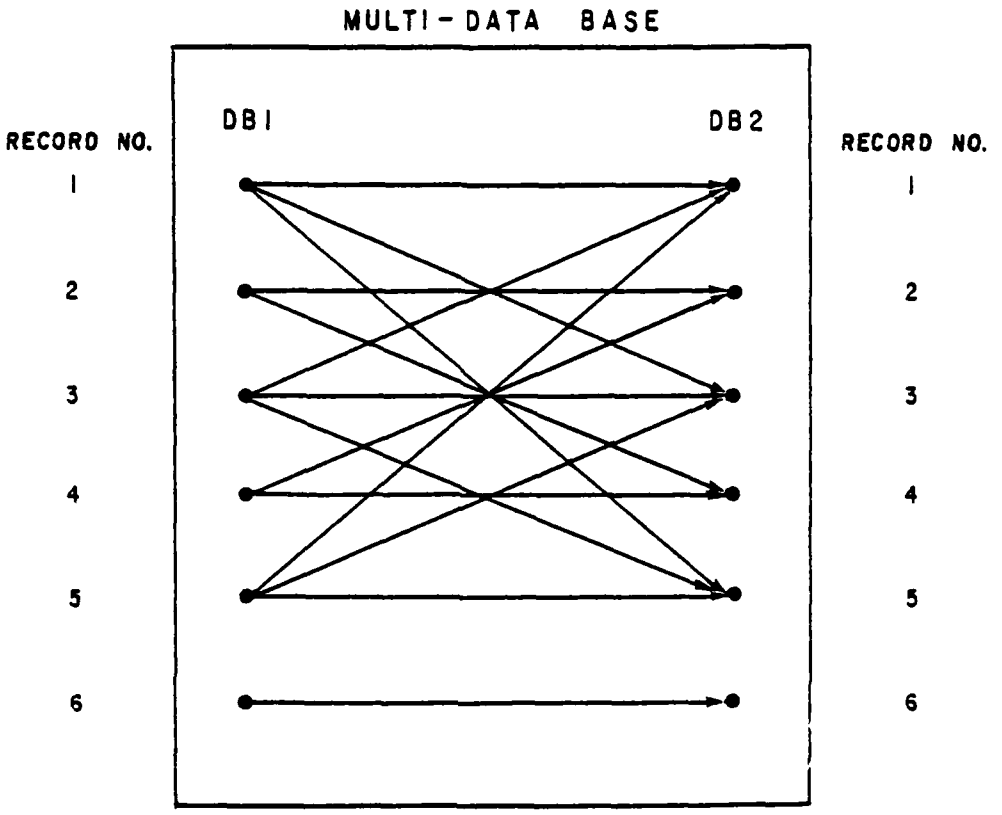
A multi-data base consists of two or more data bases which have been "linked" together by field values. Creation of multi-data bases is controlled with the OPEN and CONNECT commands. To illustrate, suppose we have two data bases, DB1 and DB2, each consisting of logical records containing data fields. DB1 and DB2 may each be a copy of the same data base, which is the case for DUPWRK2. The CONNECT command links the DB1 records to the DB2 records based on a field relationship. In DUPWRK2 the CONNECT command was:

CONNECT DB1 TO DB2 BY ITEMNUMB.

The ITEMNUMB field contains the identification number of the item receiving maintenance under the job order. The above command established a one-to-many link between each record in DB1 and the set of records in DB2 which have the same value in the ITEMNUMB field. The multi-data base established in DUPWRK2 is depicted in Figure A-27. The dots in the figure represent the logical records in DB1 and DB2. (Because DB1 and DB2 are copies of the same data base, the dots in each column symbolize exactly the same set of records.) Each record in DB1 is linked to all records in DB2 which have the same value in the ITEMNUMB field. In the figure, records 1, 3, and 5 have identical ITEMNUMB values. Records 2 and 4 also have the same ITEMNUMB value, but one different from that in records 1, 3, and 5. The horizontal links occur because every record in DB1 is always linked with its "copy" in DB2. Record 6 has an ITEMNUMB value that does not occur in any other record. The multi-data base that is created is a "new" data base with its own set of records, called group records. Every directed line segment corresponds to one group record. Each group record has a "front" half containing a DB1 record, and a "back" half containing a DB2 record. By retrieving only those group records in which the front and back WPC fields matched, but the facility fields differed, it was possible to isolate the particular records of interest.

When attempting a multi-data base query, users must keep in mind the group record structure just described. In any query, the user extracts a selected set of records and manipulates the data they contain. In a multi-data base query, however, those records are now group records. This means that the manipulation and output stages in the query must be carefully formulated to avoid logical errors and double counting. In these stages, INQUIRE requires users to qualify referenced fields by naming the data bases they come from. The user can then generate a report using field data from both the "front" and "back" halves of the group records. In the DUPWRK2 query, this made it possible to isolate those items which had the same work done at two or more facilities.

FIGURE A-27. MULTI-DATA BASE STRUCTURE



APPENDIX B

INSTRUCTIONS FOR LOADING

The process of installing a new data base can be broken down into three operations:

- tape processing.
- storage allocation
- loading.

Each operation can, in turn, be segmented into several specific steps. Figure B-1 lists the steps of each operation in the form of a checklist which the user can follow to ensure that the data base is properly installed. Descriptions of the corresponding procedures are provided in the following paragraphs; listings for the members in KEN, which are noted in the descriptions, appear at the end of the Appendix.

Tape Processing

The depot performance data are submitted by the Military Services to the DoD on computer tapes. Before these tapes can be used, they must be edited, translated, and cataloged.

In editing the tapes, a variety of factors are examined to isolate recording and format errors. The Logistics Systems Division of the Air Force Data Services Center has developed a program to identify job order records that do not conform to specifications. Each new depot performance tape received by the AFDSC is automatically edited by this program. Questions regarding tape editing should be directed to:

Ms. Priscilla Puckett
Logistics Systems Division
Directorate of OSD Systems
Air Force Data Services Center

The output of the edit program is a listing of rejected records with erroneous characters marked by asterisks (Figure B-2 illustrates a typical listing). To correct faulty data, the user should identify needed adjustments by comparing rejected records with the data specification in DoD 7220.29-H. Requests for corrected data should then be submitted to the Military Services. This process should continue until the edit program no longer identifies significant inconsistencies.

Since the tapes are developed and edited on Honeywell equipment and the data base management system resides on an IBM machine, the final corrected tapes must be translated from Honeywell Standard Format to IBM EBCDIC Format. The Logistics Systems Division has a utility program which performs such translations. Requests for this service should be addressed to Mr. T. H. Thoreson, AFDSC. For consistency, the corrected data should be placed on

FIGURE B-1. TRANSLATE THE TAPES FROM UNPACKED TO PACKED FORMAT

Action	Initiation Date	Completion Date	Notes
TAPE PROCESSING			
Acquire Annual Tapes			
Submit Tapes for Editing			
Analyze Edit Results			
Request Service Correction of Indicated Data			
Repeat Edit Cycle for Corrected Tapes			
Request Translation of Tapes to IBM EBCIDIC			
Copy Tapes into the IBM Tape Library			
Translate the tapes from unpacked to packed format			
Extend Retention Period of Cataloged Tapes			
STORAGE ALLOCATION			
Calculate Space for Data, Search, and Index Files			
Calculate Remaining Space on Each Direct Access Volume			
Request Additional Storage Space if Necessary			
Determine Disk Location of Files			
DATA BASE LOADING			
Modify Loader Program to Reflect Storage Requirements			
Execute Loader Program			
Correct and Insert Rejected Records			
Verify that All Records Were Loaded			
Compute and Insert the TOTLCOST Field			
Create Backup Copies			

FIGURE B-2. SAMPLE EDIT PROGRAM OUTPUT

```
MAR 13, 1979                    DEPOT MAINTENANCE SUBMISSION ERRORS                    PAGE 48

  1 -  86 F178     F603428472014  13F503131100008582659BEARNINGS,ANTIFRIC,UN00000001227998 A     7F
                                                                                              ***
 87 - 198 000000000
```

60000 series, 9 track, 1600 bpi tape with a block size of 10. When the translation is complete, the user should be notified of the reel numbers of the new tapes and the total number of records reported by each Service.

Since the 60000 series tapes are only used in transferring data from one computer system to another, their maximum retention period is 30 days. The depot performance data may be retained for longer periods of time by copying the data onto 85000 series tapes, which can be cataloged in the IBM system library. A job stream for tape copying and cataloging is in the KEN data set under the member name COPY. A record of the serial numbers of the new tapes should be kept for future reference.

All numeric data are submitted in unpacked form, but packed data requires significantly less storage area. Therefore, the tapes should be translated from unpacked to packed format prior to loading. This translation can be accomplished by the PACK job stream stored in the KEN data set. The serial numbers of the packed data tapes should be recorded and copies of both the packed and unpacked data tapes should be retained in the System K tape library.

The management of cataloged system tapes is the responsibility of the creator of the tapes. New tapes are kept only 30 days unless the user extends their life. Tape library lists, which are issued weekly by AFDSC, identify all cataloged tapes by area code (ASNM21 for this project) and specify release dates. The user can release tapes from the library or lengthen the retention period of others by indicating desired actions on the library list. Requests for tape lists should be directed to:

Mr. Larry Robertson
Directorate of OSD Systems
Air Force Data Services Center

Storage Allocation

Since the number of reported records varies from one fiscal year to the next, several parameters must be calculated prior to loading the data base. Figure B-3 provides a worksheet for computing those parameters. Interested readers can find additional information on the role of the parameters in the INQUIRE Installations and Operations Guide. The total number of job order records, the primary input to the computations, should be provided by the AFDSC following tape translation.

The data space and search space parameters indicate the number of disk tracks required by the data and search files, respectively. The remainder of the data base is comprised of the index file, which requires 60 tracks. Before loading the data, the user should verify that the required space on assigned direct access volumes is available. One 3330 disk pack, (Volume Serial No. OS2006) is assigned to this project. Additional space will be required to support future fiscal year data bases. Using the FY 78 and 79 data bases as a guide, one 3330 disk pack will accommodate two years of data. A picture of the available space on a disk can be obtained by submitting the

FIGURE B-3. DEPOT PERFORMANCE INQUIRE LOADER WORKSHEET

Total Number of Reported Records (All Services) = _____

Space Allocation for Key Work File = 7 x (# Reported Records)/1,000

= _____

Block Size for Sort Work File = 6 x (Space Allocation for Key Work File)

= _____

Total Data Size = 311 x (# Reported Records) + 10,000 = _____

Data Space = (Total Data Size)/7,276 = _____

Search Space = (# Reported Records)/91 = _____

MAP job stream stored in the KEN data set. Figure B-4 displays the output of MAP for the OS2006 pack. Requests for additional space should be addressed to:

Director
Automated Systems Office
Office of the Assistant Secretary of Defense
(Manpower, Reserve Affairs, and Logistics)

Loading

The edited depot performance tapes are loaded into a data base by the INQUIRE loader program, which must be modified to reflect annual changes. The job stream for this program is stored in the KEN data set under the member name LOAD. The required parameters for LOAD can be calculated using the Loader Worksheet (Figure B-3). The necessary Volume Serial numbers will be assigned by AFDSC.

After loading the new data base, it should be validated and enhanced prior to its use. To ensure that all data were loaded, the logical record count, produced as an output of the loader program, should be compared to the number of records reported by the AFDSC following tape translation. Discrepancies in these figures may be explained by records which do not conform to the data definition (i.e., field definition in the loader program). Such records will be listed in the loader program output. Each rejected record may be corrected and added to the data base using the INQUIRE ADD BATCH command, as described in Chapter X of the INQUIRE User Language Tutorial.

Finally, to improve computational efficiency, a total cost field should be added to each record. The job stream TOTLCOST in the KEN data set will compute and insert the TOTLCOST field into each record in the data base. When these developmental steps are completed, the new data base is ready for use.

FIGURE B-4. MAP OF OS2006 DISK PACK

```
29 JAN 81 / 1542      AFDSC/SFI UTILITY - DASD ALLOCATION MAP          UPDATED 07/03/78                    PAGE
 1

                 CONTENTS ON VOLUME=SER=OS2006   UNIT=187
                                                  DATE   DATE    FILE            FILE    VOL.          TOTAL  TRACKS
DIREC.  BLKS
              DATA SET NAME                      CREATED PURGE   TYPE   EXTENTS  SERIAL   SEQ. SECURITY ALLOC  USED
BLOCKS  USED
VTOC                                                                                                     18      1
        EXT--FIRST---LAST-LENGTH
         01  00001  00018  00018
FREE SPACE                                                                                                0
        EXT--FIRST---LAST-LENGTH
OS2001U.N308D.COSTAC78.IT5.DATA                  80193  00000   DIR.    02     OS2006    01     NO     3375   3375
    DSORG=DA   RECFM=F    LRECL=6444
    BLKSIZE=6444  2ND ALLOCATION=2
        EXT--FIRST---LAST-LENGTH
         01  00019  02887  02869
         02  06422  06927  00506
OS2001U.N308D.COSTAC78.IT5.INDEX                 80200  00000   INDX    01     OS2006    01     NO      342    342
    DSORG=IS   RECFM=FB   LRECL=43
    BLKSIZE=6106  2ND ALLOCATION=0
        EXT--FIRST---LAST-LENGTH
         01  02888  03229  00342
OS2001U.N308D.COSTAC78.IT5.SEARCH                80193  00000   DIR.    02     OS2006    01     NO      760    760
    DSORG=DA   RECFM=F    LRECL=6444
    BLKSIZE=6444  2ND ALLOCATION=2
        EXT--FIRST---LAST-LENGTH
         01  06087  06098  00012
         02  06928  07675  00748
OS2001U.N308D.COSTAC79.IT5.DATA                  80184  00000   DIR.    01     OS2006    01     NO     2251   2251
    DSORG=DA   RECFM=F    LRECL=6400
    BLKSIZE=6400  2ND ALLOCATION=10
        EXT--FIRST---LAST-LENGTH
         01  03230  05480  02251
OS2001U.N308D.COSTAC79.IT5.INDEX                 80200  00000   INDX    01     OS2006    01     NO      323    324
    DSORG=IS   RECFM=FB   LRECL=43
    BLKSIZE=6106  2ND ALLOCATION=0
        EXT--FIRST---LAST-LENGTH
         01  06099  06421  00323
OS2001U.N308D.COSTAC79.IT5.SEARCH                80184  00000   DIR.    01     OS2006    01     NO      606    606
    DSORG=DA   RECFM=F    LRECL=6400
    BLKSIZE=6400  2ND ALLOCATION=10
        EXT--FIRST---LAST-LENGTH
         01  05481  06086  00606
29 JAN 81 / 1542      AFDSC/SFI UTILITY - DASD ALLOCATION MAP          UPDATED 07/03/78                    PAGE
 2

                 CONTENTS ON VOLUME=SER=OS2006   UNIT=187
FIRST TRACK   LAST TRACK     LENGTH    EXTENT        DATA SET NAME
  00001         00018        00018      01        VTOC
  00019         02387        02869      01        OS2001U.N308D.COSTAC78.IT5.DATA
  02888         03229        00342      01        OS2001U.N308D.COSTAC78.IT5.INDEX
  03230         05480        02251      01        OS2001U.N308D.COSTAC79.IT5.DATA
  05481         06086        00606      01        OS2001U.N308D.COSTAC79.IT5.SEARCH
  06087         06098        00012      01        OS2001U.N308D.COSTAC78.IT5.SEARCH
  06099         06421        00323      01        OS2001U.N308D.COSTAC79.IT5.INDEX
  06422         06927        00506      02        OS2001U.N308D.COSTAC78.IT5.DATA
  06928         07675        00748      02        OS2001U.N308D.COSTAC78.IT5.SEARCH
```

As noted earlier, the data bases for FY 78 and 79 now fully occupy one (removable) 3330 disk pack, and additional 3330 packs will be required for the FY 80 data and beyond. It is suggested that after loading a new data base onto a disk pack each year, a copy of the previous year's data base also be placed on that pack. (For example, after loading the FY 80 data base onto a new pack, place a copy of the FY 79 data base on the pack as well.) This will provide a disk pack containing the two most recent year's worth of data for simultaneous on-line processing. This will reduce the number of disk mounts and demounts that the System K operator will have to perform, and will also mean that a back-up copy of the previous year's data base will exist on disk.

Occasionally, storage disks are damaged, destroying the resident data. As a precautionary measure, a back-up tape copy of each new data base should be created. The job stream BACKUP in the KEN data set provides a program for copying INQUIRE files onto high density tape. The member RESTORE in the KEN data set should be used to restore a data base from a back-up tape.

Listings for Programs Used in the Annual Loading Process

In addition to the LOAD program, the other routines in the KEN data set used in the annual loading process are COPY, PACK, MAP, TOTLCOST, BACKUP, and RESTORE. Figures B-5 through B-11 display the job streams for each of these routines as they currently exist in the KEN data set. (Blank spaces have been left in the LOAD listing to indicate those places where users must insert parameters. A listing of the LOAD job stream with example parameters appears in Figure 3-5 in Section 3.3.3, Sample Inputs.) The MAP routine has been executed on System K; the others (including LOAD) were last executed on System I, System K's predecessor, and may require some adjustment as a result.

FIGURE B-5. COPY

```
00010 //OS20CHH JOB (OS20,N308D,15U),HANKS-REMOTE,NOTIFY=OS20CHH,CLASS=U,
00020 // MSGCLASS=H
00030 /*SETUP       ****** (= SIX DIGIT REEL NO. FROM AFDSC)
00040 //COPYTAPE EXEC PGM=IEBGENER,REGION=80K
00050 //SYSPRINT DD SYSOUT=H
00060 //SYSIN DD DUMMY
00070 //SYSUT1 DD UNIT=TAPE9,DISP=(OLD,KEEP),VOL=SER=******(=SAME LINE 30)
00075 // DCB=(RECFM=FB,LRECL=360,BLKSIZE=3600),LABEL=(1,NL)
00090 //SYSUT2 DD DSNAME=A*M21U.N308D.FY**DATA,UNIT=TAPE6,DISP=(,CATLG),
00100 //  DCB=(RECFM=FB,LRECL=360,BLKSIZE=3600,DEN=4),LABEL=(,SL)
00110 //
END OF DATA
```

FIGURE B-6. PACK

```
00010 //OS20CHH JOB (OS20,N308D,15U,60),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=U,MSGCLASS=H
00040 //PACK EXEC PGM=IEBGENER,REGION=80K
00050 //SYSPRINT DD SYSOUT=H
00060 //SYSUT1 DD DSNAME=ASNM21U.N308D.AF79,UNIT=TAPE6,VOL=SER=******,
00061  (******=REEL NO FROM AFDSC)
00070 // DISP=(OLD,KEEP,KEEP),DCB=(RECFM=FB,LRECL=360,BLKSIZE=3600)
00080 //SYSUT2 DD DSNAME=ASNM21U.N308D.PKDNAME,DISP=(NEW,CATLG,DELETE),
00081  (PKDNAME=NAME CHOSEN FOR PKD TAPE)
00090 // UNIT=TAPE6,DCB=(RECFM=FB,LRECL=259,BLKSIZE=2590,DEN=4)
00100 //SYSIN DD *
00110      GENERATE   MAXFLDS=50
00115        LABELS   DATA=NO
00120        RECORD   FIELD=(64,1,,1),                                    C
00125                FIELD=(10,65,ZP,65),                                 C
00130                FIELD=(12,75,,71),                                   C
00135                FIELD=(8,87,ZP,83),FIELD=(8,95,ZP,88),               C
00140                FIELD=(8,103,ZP,93),FIELD=(8,111,ZP,98),             C
00145                FIELD=(8,119,ZP,103),FIELD=(8,127,ZP,108),           C
00150                FIELD=(8,135,ZP,113),FIELD=(8,143,ZP,118),           C
00155                FIELD=(8,151,ZP,123),FIELD=(8,159,ZP,128),           C
00160                FIELD=(8,167,ZP,133),FIELD=(8,175,ZP,138),           C
00165                FIELD=(8,183,ZP,143),FIELD=(8,191,ZP,148),           C
00170                FIELD=(8,199,ZP,153),FIELD=(8,207,ZP,158),           C
00175                FIELD=(8,215,ZP,163),FIELD=(8,223,ZP,168),           C
00180                FIELD=(8,231,ZP,173),FIELD=(8,239,ZP,178),           C
00185                FIELD=(8,247,ZP,183),FIELD=(8,255,ZP,188),           C
00190                FIELD=(8,263,ZP,193),FIELD=(8,271,ZP,198),           C
00195                FIELD=(8,279,ZP,203),FIELD=(8,287,ZP,208),           C
00200                FIELD=(8,295,ZP,213),FIELD=(8,303,ZP,218),           C
00205                FIELD=(8,311,ZP,223),FIELD=(8,319,,228),             C
00210                FIELD=(8,327,ZP,236),FIELD=(8,335,ZP,241),           C
00220                FIELD=(8,343,ZP,246),FIELD=(4,351,ZP,251),           C
00225                FIELD=(6,355,,254)
00230 /*
00235 //
END OF DATA
```

FIGURE B-7. LOAD

```
//OS20    JOB (OS20,N308D,15U,90,70),        -REMOTE,NOTIFY=OS20   ,
// CLASS=R,MSDCLASS=H
//JOBLIB  DD DSN=SYS1.INQUIRE.LINKLIB,DISP=SHR
//LOAD EXEC INQLOAD,AREA=OS2001U,PROJ=N308D,EXTNAME=COSTAC  ,ITER= ,
// INTNAME=ACCTNB  ,KEYLEN=23,LREC=33,INXREC=43,KEYRECS=   ,
// SRTRECS=    ,SRCVOL=      ,INXVOL=      ,REGION=800K,
// DATPARM='CREATE,DIRECT',SRCPARM='NOVFIL,CREATE,S*****',INXSPC=50,
(***** =NO.OF REPORTED RECORDS,IN LINE 60 ABOVE)
// SK=0,SRCSPC=    ,DATSPC=    ,SROBLK=37,SROSPC=7846,SROVOL=OS200 ,
//  DSKTYPE=3330,DATVOL=OS200 ,DATEXT=300,DATTIME=40
//DAT.BABISI DD DSN=OS2001U.N308D.REJECT,DCB=(RECFM=FB,BLKSIZE=2590,
// LRECL=259),UNIT=3330,VOL=SER=OS200 ,DISP=(NEW,CATLG,DELETE),
// SPACE=(7292,(200,1),RLSE)
//DAT.DATAFIL DD DSN=OS2001U.N308D.COSTAC  ,IT ,DATA,
// UNIT=(3330, ),VOL=(PRIVATE,RETAIN,SER=(OS200 ,OS200 )),
// DISP=(NEW,CATLG,DELETE),SPACE=(7292,(3950,300),RLSE),
// DCB=(RECFM=F,DSORG=DA,BLKSIZE=7292)
//DAT.ISI00 DD DSNAME=ASNM21U.N308D.       ,UNIT=TAPE6,
// VOL=SER=      ,DCB=(RECFM=FB,BLKSIZE=2590,LRECL=259,DEN=4),DISP=OLD
//           DD DSNAME=ASNM21U.N308D.       ,UNIT=TAPE6,
// VOL=SER=      ,DCB=(RECFM=FB,BLKSIZE=2590,LRECL=259,DEN=4),DISP=OLD
//           DD DSNAME=ASNM21U.N308D.       ,UNIT=TAPE6,
// VOL=SER=      ,DCB=(RECFM=FB,BLKSIZE=2590,LRECL=259,DEN=4),DISP=OLD
(140-158 ABOVE REQUIRE NAMES & SERIALNOS. FOR PCKED SERVICE TAPES)
//DAT.SYSIN DD *
RECTYPE  F   1
QUARTER  F   1
FY       FPR 2
PROGELT  F   6
PROGRAM  F   5        SPROGELT 1
SERVICE  FPR 1        SPROGELT 6
FACILITY FPR 14
IN/OUTUS F   1
OWNROPER F   1
RPTGFAC  F   5
ITEMNUMB FPR 13
ITEMNAME F   20   B
PRICE    P   6
SYSTEM   FPR 4
WBS      F   3
COMMODTY FPR 1        SWBS     1
CATEGORY F   1        SWBS     2
COMPONET F   1        SWBS     3
WPC      FPR 3
CUSTOMER F   2
CLABRP   P   5
CLABRPHR P   5
CLABRO   P   5
CLABROHR P   5
MLABRP   P   5
MLABRPHR P   5
MLABRO   P   5
MLABROHR P   5
FMATL    P   5
UMATLII  P   5
UMATLXC  P   5
UMATLMK  P   5
UMATLXP  P   5
FOTHER   P   5
UOTHER   P   5
FOVRHD   P   5
UOVRHD   P   5
FG&A     P   5
UG&A     P   5
CONTRACT P   5
GFMII    P   5
GFMXC    P   5
GFMMK    P   5
GFMXP    P   5
FGFSERV  P   5
UGFSERV  P   5
FMAINSPT P   5
UMAINSPT P   5
PRODGNTY P   5
TOTLCOST N   8
GNTREPYR P   5
GNTPREYR P   5
GNTOTHYR P   5
WORKDAYS P   3
BLANK    N   6
END
/*
//
END OF DATA
```

FIGURE B-8. MAP

```
00010 //OS20CHH JOB (OS20,N308D,15U),HANKS-REMOTE,NOTIFY=OS20CHH,CLASS=R,
00020 // MSGCLASS=H
00040 //MAP03 EXEC DISKMAP,PK=OS2006,UNIT=3330
00045 //DISKMAP.SYSPRINT  DD SYSOUT=H
00050 //
END OF DATA
```

FIGURE B-9. TOTLCOST

```
00010 //OS20CHH JOB (OS20,N308D,15U,60),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=R,MSGCLASS=H
00030 //JOBLIB  DD DSN=SYS1.INQUIRE.LINKLIB,DISP=SHR
00040 //INQBATCH EXEC PGM=INQUIRE1,REGION=800K,
00050 // PARM='/M,SHR,SM=150000,T=60K,P=55,L=72'
00060 //REPORT DD SYSOUT=H
00070 //SYSPRINT DD SYSOUT=H
00080 //SORTWK DD UNIT=SYSDA,SPACE=(CYL,(10,5))
00090 //SYSLIB DD DUMMY
00100 //PLIDUMP DD SYSOUT=H
00110 //DATAFIL DD DSN=OS2001U.N308D.COSTAC      .DATA,DISP=SHR
00120 //INXFIL DD DSN=OS2001U.N308D.COSTAC      .INDEX,DISP=SHR
00130 //SRCHFIL DD DSN=OS2001U.N308D.COSTAC      .SEARCH,DISP=SHR
00140 //SROVFIL DD DUMMY
00150 //SYSIN DD *
00160 OPTION ENDMINUS 8.
00170 .
00180 REPLACE TOTLCOST BY (TOTAL) IN FY=  ,COMPUTE TOTAL FORMAT (I 3)
00190 (CLABRP + CLABRO + MLABRP + MLABRO + FMATL + UMATLII + UMATLXC
00200 + UMATLMK + UMATLXP + FOTHER + UOTHER + FOVRHD + UOVRHD +
00210 FG&&A + UG&&A + CONTRACT + GFMII + GFMXC + GFMMK + GFMXP +
00220 FGFSERV + UGFSERV + FMAINSPT + UMAINSPT).
00320 /*
END OF DATA
```

FIGURE B-10. BACKUP

```
00010 //OS20CHH JOB (OS20,N308D,15U),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=R,MSGCLASS=H
00030 //DUMP EXEC IMGDUMP,AREA=OS2001U,PROJ=N308D,EXTNAME=COSTAC79,
00040 // INTNAME=ACCTNG79,ITER=4,ITEROP=4
00050 //DUMPALL.SROVFIL DD DUMMY
00060 //DUMPALL.IMAGFIL DD DSN=ASNM21U.N308D.COSTAC79.IT4.IMAGE,
00070 // DISP=(,CATLG,DELETE),UNIT=TAPE6,LABEL=(1,SL)
00075  (NOTE:  .IT4. ,ITER,ITEROP REFER TO ITERATION PART OF DATA SET NAMES)
00076  (ALSO, OUTPUT OF THIS PGM WILL INCLUDE A RESTORE CONTROL CARD ID STRING
00077   WHICH SHOULD BE RETAINED FOR USE IN THE 'RESTORE' PGM, SHOULD A
00078   RESTORE BE REQUIRED.)
00080 //
END OF DATA
```

FIGURE B-11. RESTORE

```
00010 //OS20CHH JOB (OS20,N308D,15U),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 //   CLASS=R,MSGCLASS=H
00040 //RESTORE  EXEC  IMGRESTR,AREA=OS2001U,PROJ=N308D,EXTNAME=COSTAC79,
00050 //   INTNAME=ACCTNG79,ITER=4,ITEROP=4,IMGPARM='RESTORE,OVWRITE'
00055 //RSTORALL.DATAFIL      DD DSN=OS2001U.N308D.COSTAC79.IT4.DATA,
00056 // UNIT=(2314,2),VOL=(PRIVATE,RETAIN,SER=(OS2004,OS2005)),
00057 // DISP=(NEW,CATLG,DELETE),SPACE=(7292,(3950,300),RLSE),
00058 // DCB=(RECFM=F,DSORG=DA,BLKSIZE=7292)
00060 //RSTORALL.IMAGFIL   DD DSN=ASNM21U.N308D.COSTAC79.IT4.IMAGE,DISP=OLD
00069 //SYSIN DD *
00070 RESTORE ACCTNG79800424115332086213
00080 /*
00081 (NOTES:  THIS PGM WAS USED TO RESTORE FROM TAPE TO A 2314 DISK PACK.
00082   THE TAPE WAS THE BACKUP COPY OF A 2314 PACK. TO RESTORE TO A 3330 PACK
00083   WILL REQUIRE ADJSTMNTS TO PROGRAM.  THE ID STRING IN LINE 70
00084   WAS PRODUCED IN THE OUTPUT OF 'BACKUP' WHEN THE BACKUP TAPE WAS
00085   MADE.TO USE THIS RESTORE PGM, THE USER WILL NEED THAT NUMBER
00086   FROM THE OUTPUT OF THE 'BACKUP' PGM WHEN THE BACKUP TAPE WAS MADE.)
END OF DATA
```

APPENDIX C

OTHER DATA BASE MAINTENANCE

In addition to the annual loading process, the Depot Performance data base may require other types of maintenance. As an aid to users, this Appendix lists 11 routines that have been used for data base maintenance tasks. The list below provides a brief description of each routine and gives its member name in KEN. An asterisk indicates the routine uses a cataloged INQUIRE procedure on System K. The AFDSC INQUIRE DBMS User's Handbook describes these procedures.

1. To copy a partitioned data set (PDS) from disk to tape.
   KEN Member Name: COPYPDS

2.* Used to unload the INQUIRE index file for the FY 78 data base from disk to tape.
   KEN Member Name: CYX3078

3.* Used to unload the INQUIRE index file for the FY 79 data base from disk to tape.
   KEN Member Name: CYX3079

4.* Used to copy INQUIRE data and search files from a 2314 disk pack to a 3330 disk pack.
   KEN Member Name: CY3330

5. Test program to demonstrate how to compile and link edit a FORTRAN program.
   KEN Member Name: FORTRAN

6. Test program to demonstrate how to compile, link edit, and execute a FORTRAN program.
   KEN Member Name: FORTRAN1

7.* To test the Field Definition Table of an INQUIRE data base for proper syntax.
   KEN Member Name: NOGO

8. To print specified records from a tape.
   KEN Member Name: PRPNCH

9. To remove <u>all</u> data sets from a disk pack. (Use with caution.)
   KEN Member Name: SCRATCH

10. To remove a specific data set from a disk pack.
    KEN Member Name: SCRDS

11. To print the label of a tape (so the operator can check the tape's characteristics).
    KEN Member Name: VERIFY

Figures C-1 through C-11 display listings for the above job streams. Due to the transition from System I (IBM 360/75) to System K (IBM 3032), some additional adjustments to adapt these programs may be necessary.

FIGURE C-1. COPYFDS

```
00010 //OS20CHH JOB (OS20,N308D,15U),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=S,MSGCLASS=H
00040 //BACKUP EXEC FDRDSFDU,DISK=OS2001,DSN='ASNM21U.N308D.BACKUP.KEN'
00041 COMMENT: OS2001 SHOULD BE REPLACED BY VOLSER THE PUBLIC DISKPACK
00042          IN LINE 40 IMMEDIATELY ABOVE
00050 //SYSIN DD *
00060  DUMP DSN=OS2001U.N308D.KEN
00070 /*
END OF DATA
```

FIGURE C-2. CYX3078

```
00010 //OS20CHH JOB (OS20,N308D,15U),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 //   CLASS=R,MSGCLASS=H
00035 //CYX3078   EXEC INQXUNL,INXREC=43,AREA=OS2001U,PROJ=N308D,
00040 // ITER=3,EXTNAME=COSTAC78
00090 /*
END OF DATA
```

FIGURE C-3. CYX3079

```
00010 //OS20CHH JOB (OS20,N308D,15U),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 //   CLASS=R,MSGCLASS=H
00035 //CYX3079   EXEC INQXUNL,INXREC=43,AREA=OS2001U,PROJ=N308D,
00040 // EXTNAME=COSTAC79,ITER=4,ITEROP=5,OUTVOL=OS2006
00050 //INXUNLD.INXFILU   DD DSN=&AREA..&PROJ..&EXTNAME..IT&ITEROP..INDEX,
00055 // DISP=(NEW,CATLG,DELETE),VOL=SER=&OUTVOL,UNIT=3330,
00060 // DCB=(RECFM=FB,LRECL=&INXREC,BLKSIZE=&INXREC.0,DSORG=IS,
00063 // RKP=20,OPTCD=YLRI,CYOFL=1,KEYLEN=23),
00070 // SPACE=(CYL,(25,2),RLSE)
00090 /*
END OF DATA
```

FIGURE C-4 CY3330

```
00010 //OS20CHH JOB (OS20,N308D,15U),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 //   CLASS=R,MSGCLASS=H
00060 //CY3330   EXEC  INQCOPY,AREA=OS2001U,PROJ=N308D,ITER=3,
00065 // DATEXT=2,SRCEXT=2,SROEXT=2,
00070 // EXTNAME=COSTAC78,ITEROP=5,AREAOP=OS2001U,PROJOP=N308D,
00080 // XNAMEOP=COSTAC78,SK=8,DATSPC=6750,DATBLK=6444,
00090 // SRCSPC=1520,SRCBLK=6444,SROBLK=6444,ALLVOL=OS2006,
00100 // DSKTYPE=3330,DISP=CATLG,RELPARM='ALL,NOVFIL',OUT=A,SROSPC=46
00102 //COPY.DATANEW   DD  SPACE=(&DATBLK,(&DATSPC,&DATEXT),RLSE)
00106 //COPY.SRCHNEW   DD  SPACE=(&SRCBLK,(&SRCSPC,&SRCEXT),RLSE)
00110 //COPY.SROVNEW   DD DUMMY,DCB=BLKSIZE=30
00120 //COPY.DATAFIL  DD DSN=&AREA..&PROJ..&EXTNAME..IT&ITER..DATA,
00130 //  DISP=SHR
00140 //COPY.SROVFIL   DD DUMMY
00150 /*
END OF DATA
```

FIGURE C-5. FORTRAN

```
00010 //OS20CHH JOB (OS20,N308D,15U,60),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=P,MSGCLASS=H,MSGLEVEL=(1,1)
00040 //FORTRAN EXEC FORTXCL
00050 //FORT.SYSIN DD *
00060       TOTAL=0.
00070       WRITE(6,10)
00080    10 FORMAT(1X,'INPUT FIRST VALUE - INCLUDE DECIMAL')
00090       READ(5,20) A
00100    20 FORMAT(F10.2)
00110       WRITE(6,30)
00120    30 FORMAT(1X,'INPUT SECOND VALUE - INCLUDE DECIMAL')
00130       READ(5,20) B
00131       TOTAL=A+B
00132       WRITE(6,40) A,B,TOTAL
00133    40 FORMAT(1X,F10.2,2X,'+',2X,F10.2,2X,'=',F10.2)
00134       STOP
00135       END
00140 /*
00150 //LKED.SYSLMOD DD DSN=OS2001U.N308D.LOADMOD,UNIT=2314,VOL=SER=OS2001,
00160 //  SPACE=(CYL,(2,1,3)),DISP=(NEW,CATLG,DELETE)
00190 //
END OF DATA
```

FIGURE C-6. FORTRAN1

```
00010 //OS20CHH JOB (OS20,N308D,15U),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=P,MSGCLASS=H
00040 //FORTRAN EXEC FORTXCLG
00050 //FORT.SYSIN DD *
00060       TOTAL=0.
00090       READ(5,20) A
00100    20 FORMAT(F10.2)
00130       READ(5,20) B
00131       TOTAL=A+B
00132       WRITE(6,40) A,B,TOTAL
00133    40 FORMAT(1X,F10.2,2X,F10.2,2X,F10.2)
00134       STOP
00135       END
00140 /*
00150 //GO.FT05F001 DD DSN=OS2001U.N308D.INPUT,DISP=SHR
00160 //GO.FT06F001 DD DSN=OS2001U.N308D.OUTPUT,DISP=(NEW,CATLG,DELETE),
00170 // UNIT='3330-1',VOL=SER=******,DCB=(LRECL=80,RECFM=F),SPACE=(TRK,(1,1))
00190 //
END OF DATA
```

FIGURE C-7. NOGO

```
00010 //OS20CHH JOB (OS20,M308D,15U,90,70),HANKS-REMOTE,NOTIFY=OS20CHH,
00015 // CLASS=R,MSGCLASS=H
00030 //CHECK EXEC INGNOOD,KEY=23,DB=ACCTN679
00040 //SYSIN DD *
00170 RECTYPE  F   1
00180 QUARTER  F   1
00190 FY       FPR 2
00200 PROGELT  F   6
00210 PROGRAM  F   5       SPROGELT 1
00220 SERVICE  FPR 1       SPROGELT 6
00230 FACILITY FPR 14
00240 IN/OUTUS F   1
00250 OMMROPER F   1
00260 RPTGFAC  F   5
00270 ITEMNUMB FPR 13
00280 ITEMNAME F   20  B
00290 PRICE    N   10
00300 SYSTEM   FPR 4
00310 WBS      F   3
00320 COMMODTY FPR 1       SWBS    1
00330 CATEGORY F   1       SWBS    2
00340 COMPONET F   1       SWBS    3
00350 WPC      FPR 3
00360 CUSTOMER F   2
00370 CLABRP   P   5
00380 CLABRPHR P   5
00390 CLABRO   P   5
00400 CLABROHR P   5
00410 MLABRP   P   5
00420 MLABRPHR P   5
00430 MLABRO   P   5
00440 MLABROHR P   5
00450 FMATL    P   5
00460 UMATLII  P   5
00470 UMATLIC  P   5
00480 UMATLMK  P   5
00490 UMATLIP  P   5
00500 FOTHER   P   5
00510 UOTHER   P   5
00520 FOVRHD   P   5
00530 UOVRHD   P   5
00540 FG&A     P   5
00550 UG&A     P   5
00560 CONTRACT P   5
00570 GFMII    P   5
00580 GFMIC    P   5
00590 GFMMK    P   5
00600 GFMIP    P   5
00610 FGFSERV  P   5
00620 UGFSERV  P   5
00630 FMAINSPT P   5
00640 UMAINSPT P   5
00650 PRODQNTY P   5
00660 TOTLCOST P   5
00670 QNTREPYR P   5
00680 QNTPREYR P   5
00690 QNTOTHYR P   5
00700 WORKDAYS P   3
00710 BLANK    P   4
00720 END
00730 /*
00740 //
END OF DATA
```

FIGURE C-8. PRPNCH

```
00010 //OS20CHH JOB (OS20,N308D,15U,60),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=S,MSGCLASS=H
00040 //       EXEC PGM=IEBPTPCH,REGION=100K
00050 //SYSPRINT DD SYSOUT=H
00060 //SYSUT1 DD DSNAME=ASNM21U.N308D.PNAV479,UNIT=TAPE9,LABEL=(,SL),
00070 // DISP=OLD,VOL=SER=086023,DCB=(RECFM=FB,LRECL=259,BLKSIZE=2590)
00080 //SYSUT2 DD SYSOUT=H
00090 //SYSIN DD *
00100      PRINT   TOTCONV=XE,STOPAFT=2
00110 /*
00115 //
END OF DATA
```

FIGURE C-9. SCRATCH

```
00010 //OS20CHH  JOB (OS20,N308D,11U),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=R,MSGCLASS=H
00040 //SCRATCH EXEC AEHPROGM,SER=      ,UNIT=3330
00050 //SYSIN DD *
00060  SCRATCH VOL=3330=      ,VTOC,PURGE
00070 /*
END OF DATA
```

FIGURE C-10. SCRDS

```
00010 //OS20CHH  JOB (OS20,N308D,11U),HANKS-REMOTE,NOTIFY=OS20CHH,
00020 // CLASS=R,MSGCLASS=H
00040 //SCRATCH EXEC AEHPROGM,SER=      ,UNIT=3330
00050 //SYSIN DD *
00060  SCRATCH VOL=3330=      ,DSNAME=OS2001U.N308D.COSTAC78.IT5.INDEX,PURGE
00070 /*
00080 //
END OF DATA
```

FIGURE C-11. VERIFY

```
00010 //OS20CHH JOB (OS20,N308D,15U),HANKS-REMOTE,NOTIFY=OS20CHH,CLASS=S,
00020 // MSGCLASS=H
00040 //VERIFY EXEC TAPEL,SER=######
00050 //
END OF DATA
```

APPENDIX D

DoD 7220.29-H REPORTING REQUIREMENTS

CHAPTER 7

REPORTING

SECTION 700 - REQUIREMENTS

70001 Requirements

A. These reporting requirements contained in this Chapter of the Handbook were developed by the Directorate of Maintenance Policy, OASD(I&L). The nonstandard data elements and codes contained herein will be submitted to the Logistics Data Element Standardization and Management Office for standardization. Changes incorporating the appropriate references will be added as necessary.

B. Each DoD Component shall maintain, in a central location, a magnetic tape prepared in accordance with the magnetic tape layout and instructions in this chapter. This tape will be updated quarterly on a cumulative basis for provisionally closed completed job orders. The final fiscal year tape will be submitted to the Assistant Secretary of Defense (Comptroller), Attention: Directorate for Information Operations and Control within ninety (90) days of the end of the fiscal year. A copy of the final fiscal year tape will be retained by the DoD Component indefinitely since the space required for storage of the tapes involved is so small and retention of the data will allow portrayal of weapon system maintenance costs trends. It is recognized that cards, discs, etc., are used in day-to-day operations, as well as magnetic tapes; however, magnetic tape submission of the final data for each fiscal year is required. The assigned Report Control Symbol is RCS DD I&L(A)1397.

70002 Magnetic Tape Layout

A. General

A data record is required for each type of depot maintenance work (Field 14) performed for a single customer (Field 15) at an individual activity (Field 5) on the same item or grouping of items permitted under the job order criterion in 31002.A. and identified in Field 9. All quantities and amounts will be right-justified and the unused high order positions will be zero filled. Monetary amounts will be rounded to the nearest whole dollar. If a quantity or dollar field is not applicable or a zero entry applies, the entire field will be zero filled. It is extremely important that entries for each field of the data record comply exactly with specifications in this Chapter. DoD Components shall incorporate validity checks of the data prior to submission of data to OSD.

#First amendment (Ch 1, 12/16/76)

B. Data Record for Completed Items or Services.

	Field No.	Description of Data	Tape Positions	No. of Positions	
		Record Identification			
	1	Record Type "F"	1	1A	
	2	Quarter Code	2	1N	
	3	Fiscal Year	3-4	2N	
		Identification of Facility			
	4	Program Element	5-10	6A/N	
	5	Facility Name or Code	11-24		
		a. Organic Activity Name	11-24		
		b. Contractor Activity Code	11-22	12A/N	
	6	Inside or Outside U.S. Code	25	1N	
	7	Owner/Operator Code	26	1N	
	8	Reporting Facility Code	27-31		
		Identification of Item/Service and Customer			
	9	Item Identification Number	32-44	13A/N	
	10	Item Nomenclature	45-64	20A/N	
*	11	Standard Inventory Price	65-74	10N	*
*	12	Weapon or Support System Code	75-78	4A/N	*
*	13	Work Breakdown Structure Code	79-81	3A/N	*
*	14	Work Performance Category	82-84	3A/N	*
*	15	Customer Code	85-86	2A/N	*
*	16	Unused			*

#First amendment (Ch 1, 12/16/76)

Field No.	Description of Data	Tape Positions	No. of Positions
	Labor Hour and Cost Data		
17	Direct Civilian Labor (Production) Cost	87-94	8N
18	Direct Civilian Labor (Production) Hours	95-102	8N
19	Direct Civilian Labor (Other) Cost	103-110	8N
20	Direct Civilian Labor (Other) Hours	111-118	8N
21	Direct Military Labor (Production) Cost	119-126	8N
22	Direct Military Labor (Production) Hours	127-134	8N
23	Direct Military Labor (Other) Cost	135-142	8N
24	Direct Military Labor (Other) Hours	143-150	8N
25	Direct Material Cost - Funded	151-158	8N
26	Direct Material Cost - Unfunded (Investment Items at Full Price)	159-166	8N
27	Direct Material Cost - Unfunded (Exchanges)	167-174	8N
28	Direct Material Cost - Unfunded (Modification Kits)	175-182	8N
29	Direct Material Cost - Unfunded (Expense)	183-190	8N
30	Other Direct Cost - Funded	191-198	8N
31	Other Direct Cost - Unfunded	199-206	8N
32	Operations Overhead - Funded	207-214	8N
33	Operations Overhead - Unfunded	215-222	8N

	Field No.	Description of Data	Tape Positions	No. of Positions	
	34	General and Administrative Expense - Funded	223-230	8N	
*	35	General and Administrative Expense - Unfunded	231-238	8N	*
*	36	Contract/Interservice/Non-Depot Maintenance Activity Cost	239-246	8N	*
	37	Government-Furnished Material (Investment Items at Full Price)	247-254	8N	
	38	Government-Furnished Material (Exchanges)	255-262	8N	
	39	Government-Furnished Material (Modification Kits)	263-270	8N	
	40	Government-Furnished Material (Expense)	271-278	8N	
	41	Government-Furnished Services - Funded	279-286	8N	
	42	Government-Furnished Services - Unfunded	287-294	8N	
	43	Maintenance Support Costs Organic - Funded	295-302	8N	
	44	Maintenance Support Costs Organic - Unfunded	303-310	8N	
		Production Data			
	45	Total Production Quantity Completed	311-318	8N	
*	46	Unused	319-326	8N	*
	47	Quantity of Completed Items Inducted During Reporting Year	327-334	8N	

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Field No.	Description of Data	Tape Positions	No. of Positions
48	Quantity of Completed Items Inducted During Year Preceding Reporting Year	335-342	8N
49	Quantity of Completed Items Inducted During All Other Previous Years	343-350	8N
50	Work Days in Process	351-354	4N
	Leave Blank	355-360	

C. Explanation of Entries Required for Data Record

Field 1 - Record Type

Use record type "F" to identify this record.

2. Field 2 - Quarter Code

Use Reference No. QU-JB. DoD 5000.12M (reference (j)).

3. Field 3 - Fiscal Year

Use Reference No. YE-NA. DoD 5000.12M (reference (j)).

4. Field 4 - Program Element

Use program element codes for performing activity as specified in DoD 7045.7-H (reference (h)).

5. Field 5 - Facility Name or Code

a. Organic Activity Name. If the activity is Government-Operated (Codes 1, 2 or 4 in Field 7), enter an alpha name (abbreviated as necessary so as not to exceed 14 digits) of the activity at which the depot maintenance is performed. Start in position 11, and if the name is less than 14 digits, leave the remaining positions blank. The activity name must be spelled the same on all records. *

b. Contractor Activity Code. If the maintenance activity is contractor-operated, enter the 12 digit code as prescribed in DoD Procurement Coding Manual, VOL. II (reference (k)) to identify the contractor and his location (city and state or country). Start in position 11 and leave positions 23 and 24 blank. Positions 11 through 16 must be numeric and cannot be blank or alpha. If positions 21 and 22 are alpha (denoting foreign locations), positions 17 through 20 must be zero filled -- except for Puerto Rico. If the code number is not listed in the Manual, within 20 days after the contract award, a request for assignment of a code shall be forwarded to the OASD (Comptroller), Attention: Directorate for Information Operations and Control, Washington, D.C. 20301. Small contractors not eligible for code will be included by zero filling this field. *

6. Field 6 - Inside or Outside U.S. Code

Enter one of the following codes to indicate whether the organic or contractor activity performing the depot maintenance is located within or outside the contiguous United States. Code 1 shall be used to indicate within the U.S.; Code 2, outside the U.S., including Alaska and Hawaii.

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7. Field 7 - Owner/Operator Code

Enter one of the following to indicate the type of activity performing the maintenance:

Code 1 - Government-Owned, Government-Operated-Reporting Component - Depot Maintenance Activity.

Code 2 - Government-Owned, Government-Operated-Reporting Component - Non-Depot Maintenance Activity.

Code 3 - Contractor-Owned, Contractor-Operated; Jointly (Contractor and Government) - Owned, Contractor-Operated; or Government-Owned, Contractor-Operated.

Code 4 - Government-Owned, Government-Operated - Other Component. Use this code for completed work authorized by the Reporting Component's budget, but performed in another Component's activity.

When Code 1 is entered in this field, Fields 36 through 42 will be zero filled; when either of Codes 2, 3, or 4 is entered, Fields 17 through 35 will be zero filled.

When Code 2 is entered in this field, Field 36 will be non-depot maintenance activity cost; when Code 3 is entered, Field 36 will be contract cost; when Code 4 is entered, Field 36 will be inter-service cost.

8. Field 8 - Reporting Facility Code

A code identifying the reporting activity, including the purchasing or contract administration office, as well as a depot maintenance activity operated by the reporting service. Use Reference No. DE-NM, DoD 5000.12M (reference (j)) - one digit for DoD Component, and Reference No. CO-HJ, DoD 5000.12M (reference (j)) - four digits for organization. * *

9. Field 9 - Item Identification Number

A code to identify the specific item on which depot maintenance was performed. Do not use punctuation such as dashes or slashes, or blank spaces between digits. Start in position 32; and if less than 13 digits are required, leave unused positions blank. Sample entries for this field are as follows:

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a. If the item is an aircraft, an aircraft or rocket engine, or a missile, show the type, model and series according to the examples below. See DoD Directive 4120.15 (reference (1)). Do not show type, model or series in this field for communication or other equipment.

ITEMS	TAPE POSITIONS										
	32	33	34	35	36	37	38	39	40	41	42
TYPE OF AIRCRAFT											
Prototype Aircraft	Y	R	F	1	Ø	A					
Special Mission Type Aircraft	R	B	5	7	B						
Standard Series Type Aircraft	F	9	A								
Experimental Type Aircraft	X	C	H	4	6	B					
Standard Type Helicopter	O	H	4	A							
TYPE OF ENGINE											
Experimental Jet Engine	X	J	7	9	G	E	1	3			
Standard Reciprocating Engine	I	O	4	7	Ø	D					
Standard Reciprocating Engine, Water Injection	R	2	8	Ø	Ø	9	9	W			
Standard Jet Engine	J	3	3	A	2	Ø					
Standard Reciprocating Engine, Water Injection, Ser A	R	1	8	2	Ø	8	2	W	A		
Standard Turbo-Fan Engine	T	F	2	3	P	7					
Commercially Designated Engine	G	S	O	4	8	Ø	A	1	A	6	
TYPE OF MISSILE											
Standard Missile	L	G	M	3	Ø						
Experimental Missile	X	A	I	M	2	6	A				
Standard Probe	P	W	N	5	N						
Standard Rocket	M	C	R	1	B						

NOTE: Ø means zero.

b. If the item is a vessel, show ship type and hull number in the first eight (8) positions, and leave the remaining five (5) positions blank.

c. If ammunition rework or renovation is performed by a depot level maintenance activity, total costs will be recorded by work breakdown structure code H3, (Field 13) only and this field will be left blank.

* d. If none of the above is applicable and the job order criterion * in 31002.A. requires NSN identification, enter that NSN; e.g., 6730001161618 in positions 32 through 44.

* e. If none of the above is applicable, enter the letters or num- * bers used in the Job Order identification required in 31002.A. * The first four digits should identify Federal Supply Classes * per the H2-1 Cataloging Handbook and, of the remaining 9 * positions, one must be alphabetic. Leave field blank when WPC * (Field 14) is for "maintenance support" (P, Q, R, S) or "non- * maintenance" (T).

10. Field 10 - Item Nomenclature

A 20-digit field describing the specific item on which maintenance was performed, or the support service which was performed. Use common abbreviations if more than 20 positions would otherwise be required. Start in position 45 and leave blank, unused positions to the right.

a. For aircraft and missiles, use popular names, if assigned, e.g., LIFTMASTER, SKYTRAIN, CHICKASAW, COUGAR, FALCON, LANCE, FIREBEE, TITAN, etc. If a popular name has not been assigned, or is unknown, use the basic mission of the aircraft or missile; e.g., FIGHTER AIRCRAFT, TRAINER AIRCRAFT, CARGO TRANS AIRCRAFT, UTIL HELICOPTER, AIR GROUND MISSILE.

b. For aircraft and rocket engines, use the name of the engine type. Examples are: TURBOJET ENG, RAM JET ENG, LIG PROP ENG, ROCKET ENG, RADIAL ENG.

* c. For vessels, use the name of the ship type. Examples are FBM SUB, * NUCLEAR; ATTACK CARRIER; ANTISUB DESTROYER; etc.

d. For conventional ammunition, use "Ammunition."

e. For items with an NSN, use the description generally carried in the Federal Supply Catalog.

* f. For manufactured items, use either "For Stock Fund" or "Non-Stock * Fund."

g. For maintenance support functions, use the abbreviated title of the function.

h. For all other items, use the noun and modifiers best describing the item.

11. Field 11 - Standard Inventory Price

Enter the unit price of each item identified in Field 9. Zero fill this field for vessels and for Work Performance Categories N through T. If the unit price of an item such as ammunition is customarily cited in hundreds or thousands and the conversion to a "per each" price would distort the figures, the unit price shall be given on a per hundred or per thousand basis and the quantity completed in Field 45 shall also be reported in hundreds or thousands as applicable. Otherwise, all items shall be reported on a "per each" basis.

12. Field 12 - Weapon or Support System Code

A code identifying a specific weapon or support system. Use existing coding systems now used by DoD Components for depot maintenance reporting. A copy of the coding system used shall be submitted with the magnetic tape for the first data submission and shall be updated as changes occur. Code 997 shall be used if an item cannot be identified to a specific weapon or support system, but can be identified in Field 13 to a major commodity group (e.g., aircraft, missiles) and to a category (e.g., fighters, bombers, etc.) within the major commodity group. Code 998 shall be used if identification is possible only to the major commodity group and not to a category. Code 999 shall be used if identification cannot be made to a major commodity group and Work Breakdown Structure Code L11 is used in Field 13.

13. Field 13 - Work Breakdown Structure Code

Each record on the magnetic tape shall carry in Positions 79-81 a code to identify the weapon or support system work breakdown structure applicable to the item described by the Identification Code (Field 9) and Item Nomenclature (Field 10). Use the Work Breakdown Structure Code established in Appendix D. Code L11 shall be used if the item, service, or investment cannot be identified with a specifically listed Work Breakdown Structure Code and Code 999 is used in Field 12.

14. Field 14 - Work Performance Category

This is a code to indicate the type of maintenance work provided on the item identified in Field 9 or the type of maintenance support service provided. Use the Codes in Appendix E. Basic alpha codes should be subdivided with a numerical designation by each Component

as required for its internal management and analysis and budget reviews and justification. For all items with a Work Performance Category of P through S, a dollar entry is required in Field 43 or 44 if the maintenance support functions are performed by depot maintenance activity or maintenance support activity personnel and in Field 36 if performed by contractor personnel.

15. Field 15 - Customer Code

A two digit code identifying the DoD Program and Department or Agency billed for the maintenance cost. Position 85 shall identify the DoD program by a numeric code from 1 through 0. If no DoD program is involved, e.g., work performed for other Federal Agencies, leave blank. Position 86 shall use Reference No. DE-NM. DoD 5000.12M (reference (j)) for DoD Component. Additionally, use: Y - Other Federal Agencies, and Z - Non-Federal Agencies.

16. Field 16 - Leave Blank

17. Fields 17-44 - Labor Hour and Cost Data

a. General. The direct labor hours and summary elements of cost to be reported are set forth below. The various elements of cost are explained in detail in Chapter 3. Some clarifying notations are included below for certain fields.

b. Field 17 - Direct Civilian Labor (Production) Cost.

This field will be completed only for Work Performance Categories A through M or T in Field 14.

c. Field 18 - Direct Civilian Labor (Production) Hours.

This field will be completed only for Work Performance Categories A through M or T in Field 14.

d. Field 19 - Direct Civilian Labor (Other) Cost.

This field will be completed only for Work Performance Categories A through N or T in Field 14.

e. Field 20 - Direct Civilian Labor (Other) Hours.

This field will be completed only for Work Performance Categories A through N or T in Field 14.

f. Field 21 - Direct Military Labor (Production) Cost.

This field will be completed only for Work Performance Categories A through M or T in Field 14.

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g. Field 22 - Direct Military Labor (Production) Hours.

This field will be completed only for Work Performance Categories
* A through M or T in Field 14. *

h. Field 23 - Direct Military Labor (Other) Cost.

This field will be completed only for Work Performance Categories
* A through N or T in Field 14. *

i. Field 24 - Direct Military Labor (Other) Hours.

This field will be completed only for Work Performance Categories
* A through N or T in Field 14. *

j. Field 25 - Direct Material Cost Funded.

k. Field 26 - Direct Material Cost Unfunded (Investment Items at Full Price).

l. Field 27 - Direct Material Cost Unfunded (Exchanges).

m. Field 28 - Direct Material Cost Unfunded (Modification Kits).

n. Field 29 - Direct Material Cost Unfunded (Expenses).

Customer furnished expense items would be covered by this cost element.

o. Field 30 - Other Direct Costs Funded.

p. Field 31 - Other Direct Costs Unfunded.

An example is personal service funded by the Veterans Administration.

q. Field 32 - Operations Overhead Funded.

r. Field 33 - Operations Overhead Unfunded.

Military personnel costs for indirect effort is a primary example.

s. Field 34 - General and Administrative Expense - Funded.

t. Field 35 - General and Administrative Expense - Unfunded.

u. Field 36 - Contract/Interservice/Non-Depot Maintenance Activity Cost.

When code 1 is entered in Field 7, this field will be zero filled; when code 2 is entered in Field 7, this field will be non-depot maintenance activity cost; when code 3 is entered in Field 7, this

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field will be contract cost; when code 4 is entered in Field 7, this field will be interservice cost.

v. Field 37 - Government Furnished Material (Investment Items at Full Price).

w. Field 38 - Government Furnished Material (Exchanges).

x. Field 39 - Government Furnished Material (Modification Kits).

y. Field 40 - Government Furnished Material (Expense).

z. Field 41 - Government Furnished Services - Funded.

aa. Field 42 - Government Furnished Services - Unfunded.

bb. Field 43 - Maintenance Support Costs Organic - Funded.

cc. Field 44 - Maintenance Support Costs Organic - Unfunded.

18. Field 45 - Total Production Quantity Completed

Enter the total quantity of items (see the definition for completed items) covered by job orders financially completed during the period covered by the report. This field must be zero filled for Work * Performance Categories N through T. See instructions for Field 11 * for special reporting of quantities in hundreds or thousands to avoid distortion of data. The quantity entered in this field should equal the sum of the quantities entered in Fields 47, 48 and 49.

* 19. Field 46 - Leave Blank *

20. Field 47 - Quantity of Completed Items Inducted During Reporting Year

21. Field 48 - Quantity of Completed Items Inducted During Year Preceding Reporting Year

22. Field 49 - Quantity of Completed Items Inducted During All Other Previous Years

23. Field 50 - Work Days in Process

Reporting average number of work days that items were in process, i.e., from date of physical induction to date when items are completed, passed final inspection, and are ready for delivery to the customer.

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D. Edit Requirement

Field	Description	Tape Positions	Edit Instructions
1	Record Type	1	Must be F.
2	Quarter Code	2	Must be 1-4 for current fiscal quarter.
3	Fiscal Year	3-4	Must be two terminal digits of current fiscal year reported.
4	Program Element	5-10	Position 10 (low order position) must contain code A, F, M. or N for military service reporting.
5	Facility Name or Code	11-24	If entry in Owner/Operator Code (Field 7) is 1, 2, or 4, then position 11 must be alphabetic. If entry in Owner/Operator Code is 3, then positions 22-24 must be blank, positions 11-20 must be numeric and if positions 21-22 are alphabetic other than PR, then positions 17-20 must be zeros.
6	Inside or Outside U.S. Code	25	Must be 1 or 2.
7	Owner/Operator Code	26	Must be 1-4. Also see Note 1.
8	Reporting Facility Code	27-31	Position 27 must be A, F, M, or N. No edit on positions 28-31 at present time.
9	Item Identification Number	32-44	This field must have an entry unless Work Performance Category (Field 14) has code P, Q, R, S, or T, or Work Breakdown Structure Code (Field 13) has code H3.

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Field	Description	Tape Positions	Edit Instructions
10	Item Nomenclature	45-64	Must have an entry.
11	Standard Inventory Price	65-74	Must have numeric entry. Also, must be zeros if Work Performance Category (Field 14) has code N-T.
12	Weapon or Support System Code	75-78	Must have code entry. Also see Note 2.
13	Work Breakdown Structure Code	79-81	Must have valid code from Appendix D. See note 2 for exceptions.
14	Work Performance Category	82-84	Position 82 must be A-N or P-T. Positions 83-84 must be numeric or blank. Also see Note 3.
15	Customer Code	85-86	Position 85 must be blank or numeric. Position 86 must be A, F, M, N, S, Y, or Z.
16	Not Used		
17-44	(Labor Hours & Cost Data)	87-310	Must be numeric or zero filled. Also see Note 4.
45-50	(Production Data)	311-354	Must be numeric or zero filled, except that positions 319-326 are blank. Also see Note 5.
	Leave Blank	355-360	

Note 1. If Field 7 is 2, 3, or 4, then Fields 17-35 must be zero.
If Field 7 is 1, then Fields 36-42 must be zero.

Note 2. If Field 12 is 999, then Field 13 must be L11.
If Field 12 is 998, then Field 13, positions 80 and 81 must be blank.
If Field 12 is 997, then Field 13, position 81 must be blank.

Note 3. If Field 14 is A-N or T, then Fields 43-44 must be zero.
If Field 14 is N, then Fields 17, 18, 21 and 22 must be zero.
If Field 14 is P-S, then Fields 17-35 and 32-42 must be zero.
If Field 14 is N-T, then Fields 45-50 must be zero.

Note 4. If cost data in Fields 17, 19, 21 or 23 have zeroes, then the accompanying Hours Data in Fields 18, 20, 22 or 24 must also have zeroes. The reverse conditions are also edited in the same manner.

Note 5. Field 45 must equal the sum of Fields 47, 48 and 49.

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E. Tape Submission

1. Each DoD Component will insure that the magnetic tape is in binary coded decimal form, unblocked or blocked 10, 7 or 9 track, and with a tape density of 556 or 800 characters per inch. The tape will contain a header record of not more than 84 characters followed by a tape mark (7-8 punch), then the data records described in 70002.B., and a trailer label of not more than 84 characters preceded and followed by a tape mark (7-8 punch). The contents of the header and trailer labels will be determined by each reporting DoD Component.

2. Tape reels will have an external label identifying the contents; i.e., Depot Maintenance and Maintenance Support Cost and Production Report, fiscal year of report, submitting component name and office name and mailing address to which the reels are to be returned. The external label must also indicate whether the tape is 7 or 9 track, 556 or 800 density, and whether the data records are unblocked or blocked 10.

70003 Special Reports

Any one-time or additional reports will be prescribed in accordance with DoD 5000.19 (reference (i)).

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APPENDIX E

AFDSC ORGANIZATIONAL DIRECTORY

PENTAGON
WASH, DC
20330

AIR FORCE DATA SERVICES CENTER

AIR FORCE COMMUNICATIONS COMMAND

DEPUTY COMMANDER FOR DATA AUTOMATION

REVISED AS OF 24 NOV 1980
OPR: DA
AUTOVON: 22 + EXTENSION
AREA CODE: 202
CHANGES/CORRECTIONS: 75005
TELECOPIER: 75005

ORGANIZATIONAL
DIRECTORY
CHART

COMMAND

COMMANDER	CC	COL D. KNUTSON	74264
EXEC DIRECTOR	CA	GS15 C. BATES	74264
NCOIC, AFDSC	CCF	SMS I. DRAUGHN	74264
SECRETARY		GS08 B. LILLER	74264

EXECUTIVE OFFICE (CE)

EXECUTIVE	CE	MAJ R. LEE	74264
MIL PERSONNEL	CE	TSG M. SPANGLER	77472
CIV PERSONNEL	CE	GS07 G. JOHNSON	77472
SECRETARY	CE	GS06 B. RAPP	74264

HEADQUARTERS SQDN SECTION

COMMANDER	CCQ	LTC E. LENART	54002
FIRST SGT	CCQF		54004
UNIT ADMIN	CCQA	SSG M. WHITE	54006
UNIT OJT MGR	CCQT	SSG K. MCGINTY	54028

DIRECTORATE OF ADMINISTRATION (DA)

DIRECTOR	DA	2LT P. JOHNSON	75005
DEPUTY	DDA	TSG C. PRICE	76485
ADMIN	DAAC	SSG D. DELOATCH	54184

DIRECTORATE OF COMPUTER SUPPORT (EO)

DIRECTOR	EO	COL C. SUMMERS	78935
DEPUTY		GS14 J. KLARAS	78935
ADMIN	EOA	MSG W. COLEMAN	76140
QUALITY ASSURANCE	EOC	GS12 W. FLOOD	50262
H6060/6635 SPT DIV			
CHIEF	EOG	MAJ M. LUKES	52600
NCOIC		SMS E. MILLEGAN	52600
IBM COMP SPT DIV			
CHIEF	EOI	GS12 T. COCKERHAM	52600
NCOIC		SMS B. BRINSON	52600
MULTICS/H6030			
CHIEF	EOM	GS13 M. KIRSCHNER	52600
NCOIC			73613
CUSTOMER SPT DIV			
CHIEF	EOS	MAJ R. GARRETT	52600
DEPUTY		GS13 J. COLLIER	52600
NCOIC		CMS J. MATHEWS	73613
CHIEF CUST SUP BR		GS12 J. LARE	73614
CHIEF REM OPS BR		2LT M. SMITH	45451

PROGRAMS & FINANCIAL SYS (GK)

DIRECTOR (ACTING)	GK	LTC A. SCHUMAKER	76872
DEPUTY (ACTING)		LTC W. JOHNSTON	76872
ADMIN	GKA	MSG M. GREEN	44745
MAN SYS DIV	GKE	MAJ A. WINKLER	76802
BUD & FIN SYS DIV	GKF	GS13 E. BARBARA	76860
PGM & CON SYS DIV	GKP	GS14 M. CRIDDLE	76843

DIRECTORATE OF PLANS & MGT (XM)

DIRECTOR	XM	LTC P. HARRIS	59147
ADMIN	XMA	TSG T. GOWEN	59147
RES MGT DIV	XMR	LTC R. SHEFFIELD	77913
RES CON BR	XMRC	CAPT D. BAER	51278
SUPPLY		SSG M. ARCHER	70604
FINAN MGT BR	XMRF	CAPT W. THOMPSON	76682
MANAGE INFO BR	XMRM	GS13 J. HUNSUCKER	77913
TRAINING	XMRT	2LT D. O'HORA	53506
TECH SPT DIV	XMT	GS14 O. SMITH	78723
COMM BR	XMTC	MAJ D. NOLL	78723
FACILITIES BR	XMTF	GS12 R. ANDREAE	78723
SECURITY BR	XMTS	MAJ V. MARSHALL	52639
REQ & PLANS DIV	XMX	MAJ J. WHITTAKER	72624
REQUIREMENTS BR	XMXR	CAPT J. WITHROW	72624
PLANNING BR	XMXX	CAPT C. GAUSCHE	72624

DIRECTORATE OF AIR STAFF SYSTEMS (GL)

DIRECTOR	GL	GS15 A. FIDROCKI	51843
DEPUTY		LTC R. TUFTS	51843
ADMIN	GLA	MSG N. SANDERS	53566
OPN CMD & CNT DIV	GLC	MAJ H. TAYLOR	77235
DATA AUTO SYS DIV	GLD	LTC A. COTTON	43880
ENG SYS & PER DIV	GLP	GS13 L. FLENS	41140
SPEC RQMTS DIV	GLR	MAJ H. NESTLERODE	77776
ADMIN SYS DIV	GLS	MAJ D. HOWARD	74058

DIRECTORATE OF SYS SUPPORT (SF)

DIRECTOR	SF	GS15 J. SHIELDS	77711
DEPUTY		LTC B. BURNS	77276
COMP PERF MGT	SFC	GS13 L. PANTZER	56161
INFO TECH DIV	SFA	MAJ J. KRIENDLER	56161
360 SYS SPT DIV	SFI	GS14 J. STEGMAN	51274
MULTICS SPT DIV	SFS	LTC H. FRAZIER	50151
SYSTEM SPT DIV	SFT	GS14 G. SUMMERS	77712

SOFTWARE ENGINEERING TEAM (SD)

CHIEF		GS15 D. ADAMS	74134

DIRECTORATE OF OSD SYSTEMS (GN)

DIRECTOR	GN	COL W. SANFORD	51309
DEPUTY		GS14 L. WILSON	79935
ADMIN	GNA	SSGT M. CAREY	78883
FIN SYS DIV	GNF	GS14 J. KEIRS	79539
LG SYS DIV	GNL	LTC R. PRUDEN	51330
MAN SYS DIV	GNM	GS14 L. ROBERTSON	53389
DATA SEC SYS DIV	GNP	GS14 P. SAMPEY	51610
DEF SYS DIV	GNR	GS14 D. STEWART	72051

APPENDIX F

FEDERAL INFORMATION PROCESSING STANDARD SOFTWARE SUMMARY

01. Summary date (Yr. / Mo. / Day)	02. Summary prepared by (Name and Phone)	03. Summary action
81 / 02 / 09	C. H. Hanks (301) 229-1000	New [X] Replacement [ ] Deletion [ ]
04. Software date (Yr. / Mo. / Day)	**05. Software title**	Previous Internal Software ID
81 / 01 / 30	DEPOT PERFORMANCE DATA BASE SYSTEM	**07. Internal Software ID** (OPR PROJ)
06. Short title	DEPOT PERFORMANCE DBS	0S20N308D - AFDSC

08. Software type	09. Processing mode	10. Application area	
		General	Specific
[X] Automated Data System	[ ] Interactive	[ ] Computer Systems Support/Utility	Depot Maintenance Cost and Production Data
[ ] Computer Program	[X] Batch	[ ] Scientific/Engineering	
[ ] Subroutine/Module	[ ] Combination	[ ] Bibliographic/Textual	
		[X] Management/ Business	
		[ ] Process Control	
		[ ] Other	

11. Submitting organization and address	12. Technical contact(s) and phone
Logistics Management Institute 4701 Sangamore Road Washington, D.C. 20016	C. H. Hanks (301) 229-1000

13. Narrative

The Depot Performance DBS is a management information system to support analyses of depot maintenance performance in the Department of Defense. The DBS provides access/information retrieval capability for DoD 7220.29-H cost and production data on depot maintenance programs compiled annually by the Military Departments and submitted to Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics). It utilizes the INQUIRE DBMS package installed on System K (IBM 3032) at Air Force Data Services Center, the Pentagon, Washington, D.C.

14. Keywords

Depot Maintenance; Cost and Production Data; Data Base Management System; Information Retrieval

15. Computer manuf'r and model	16. Computer operating system	17. Programming language(s)	18. Number of source program statements
IBM 3032 (System K, AFDSC)	OS/VS2 MVS Release 3.7	INQUIRE DBMS User Language	14 application & 12 macros 18 data base routines
19. Computer memory requirements	**20. Tape drives**	**21. Disk/Drum units**	**22. Terminals**
800K bytes (8 bits/byte)	3 (maximum) 1600/6250 bpi	1 (removable) 3330 DASD (100M bytes)	1 asynchronous TTY 300 baud

23. Other operational requirements

INQUIRE DBMS software package - Release 10, Version 1, or later release, if compatible.

24. Software availability			25. Documentation availability		
Available	Limited	In-house only	Available	Inadequate	In-house only
[ ]	[X]	[ ]	[X]	[ ]	[ ]
For Government use only			Users Manual Logistics Management Institute 4701 Sangamore Rd., Washington, D.C.		

26. FOR SUBMITTING ORGANIZATION USE

Users Manual, format and contents as prescribed in DoD 7935.1-S "Automated Data Systems Documentation Standards," September 1977.

Prepared by LMI, Defense Contract No. MDA-903-80-0554 (Task DP102)

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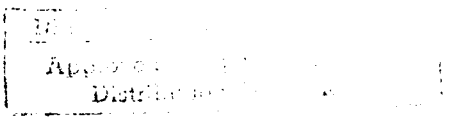

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

"A" Approved for public release; distribution unlimited

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Depot Maintenance, Cost and Production Data; Management Information System, Data Base Management System, ADP Documentation, Users Manual

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

The Depot Performance Data Base System (DBS) is a computerized management information system designed to support analyses of depot maintenance performance in the Department of Defense. The Users Manual provides instructions on operating and using the DBS, along with descriptions of prewritten routines for generating specific reports. The system is operational and has been used to develop reports for the Office of the Assistant Secretary of Defense (MRA&L) on the FY78 & 79 depot maintenance programs in DoD. The system utilizes the INQUIRE Data Base Management System (DBMS) software package installed on System K (IBM 3032) at the AFDSC, the Pentagon, Washington, D.C.

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